The Builder.

VOL. XVI.—No. 786.

The Building for the Sheepshanks Collection of Pictures at Brompton.

SOME time ago, early in the history of what is called the South Kensington Museum, we gave some particulars of the building which was being erected, north of the iron structure, to receive the collection of pictures munificently presented to the country by Mr. Sheepshanks. Since then thousands of persons have visited the collection in its new quarters, and have found reason to be satisfied with the accommodation provided. An account of the building, by Captain Fowke, R.E. under whose direction it was erected, has just now been published,* and, with the goodwill of the Department, we shall give our readers the pith of it, suggesting, nevertheless, to those who give attention to the subject, that they should obtain the pamphlet itself.

The proportions of the building, it seems, were much governed by its connection with the main museum. The principal conditions laid down previously to its being designed were, that its width should equal that of one of the three iron vaults or spans which constitute that building, viz. 42 feet; that its two floors should also be on a level with the corresponding museum floors; that although in close proximity to, it should not be in actual contact with, the latter building; that the floors and all other parts should be of such a construction as to avoid as much as possible all risk from fire; that the upper or picture-gallery rooms should be lighted from above, and that the lower rooms should have as much light as possible, and should be open from side to side; that no iron columns or supports should be used, and that all iron employed in the construction should be so covered or protected by non-conducting materials as to be beyond the influence of any fire that might accidentally occur. We may say here, while it occurs to us, that the results of one of these conditions, the *tile-floors*, are objected to by many as dangerous to health in some weather.

The new gallery may be described as a two-story building covering a rectangular plot of ground of about 87 feet long by 50 feet in breadth; its height above the ground line being 34 feet to the eaves, or rather more than 50 feet extreme measurement from foundation to ridge. It is composed of seven bays exactly similar one to another, and a cross wall divides the building into two unequal portions of four and three bays respectively; this sub-division having been adopted as an additional precaution in case of part of the gallery being at any time in danger from fire. In the upper floor, the subdivision is carried still further, by means of a centre wall running the entire length of the building, which is for the purpose of affording sufficient wall space for hanging the pictures, and, at the same time, of reducing the gallery to proportions more consistent with their proper exhibition. This wall is left out in the rooms of the lower floor, its place being supplied by a row of brick piers, one in each bay, down the centre of the building. The upper floor, of which we annex a plan, contains, then, four separate rooms, two of 46×20 feet, and two smaller ones of 35×20 feet, lighted entirely from the roof, and giving a total wall space available for hanging pictures of 2×2,440 + 2×1,900 = 4,340 square feet, after making the necessary deductions for doors.

The building may be said to be composed of a roof and floors supported by three parallel series of brick piers, those in the upper floor being connected together longitudinally by thin brick screens, the external screen being composed of 9-inch brickwork carried up fair with the inside face of the piers, while those along the centre are double and hollow, formed of two half-brick walls, built fair with their respective faces of the piers, and with an interval between them of 14 inches. These half-brick walls are carried on cast-iron girders, which reach from pier to pier, and support the iron joists of the upper floor.

The piers are strengthened up to the level of the upper floor by counterforts or buttresses. The materials used in the construction are the best grey stock bricks, faced with an ornamental brickwork of Suffolk cream-coloured, Staffordshire blue, and Surrey red, bricks.

The lower floor is composed of York landings carried on brick piers 6 feet apart, and the upper is on the principle patented by Messrs. Fox and Barrett. The only iron which would be exposed to the action of any fire that might occur in the lower rooms is that of the cast iron girders which rest on the piers in the centre of the building, and care has been taken to protect these as much as possible by an application of a terra-cotta shield to their bottom flange. This shield is made to take the form of the simple cavetto which runs round the rooms, and below this is continued a frieze of the same material, which, being perforated in an ornamental pattern, serves as the means of communication between the lower rooms and the ventilating shafts between the upper hollow walls, the whole cornice forming at the same time a decorative feature of the lower rooms.

The form of the roof, it will be seen by the section, is that of a double mansard, having the lower pitch omitted in the valley, that is, it is what is called an M roof, but *mansardé*, to borrow a French expression, towards the eaves. The tie-beam is continuous through both roofs, and the rest of the timbers, viz. purlins, common rafters, &c. are fixed in the ordinary way. The covering material is a French tile known as the "tuile Courtois," mentioned in our notice of the Paris Exhibition of 1855.

The water from the outer parts of the roof is received by an eaves gutter of cast-iron, from which it is carried off by ornamental cast-iron stack pipes, one of which is attached to the centre mullion, or secondary pier, of each bay.

The building is kept at a distance of 4 feet from the iron museum, in order that there may be a more perfect isolation in the event of fire occurring in the latter building, and the communications between the two buildings (of which there are two on each floor), are so constructed as to interfere as little as possible with this isolation. For this purpose the permanent part of the communication consists merely of a floor or bridge (formed in each case of a single slab of Yorkshire stone), which is covered by a very slight roof of wood and glass, the sides being formed by double doors, one pair in the wall of each building, which on being opened meet each other, and form a continuous side wall to the passage, and when closed leave it open to the external air. This roof and doors, by the way, should be of iron.

There are arrangements for the supply of water in the event of fire, but of these we cannot stop to speak.

The day lighting of the upper rooms of the building is accomplished by means of a skylight which extends along the entire length of the roof, and measures 14 ft. in width, that is, 7 ft. from the ridge on either side, the entire width of opening being 12 ft. 6 in. measured on a horizontal plane. As will be seen by reference to the section, each room is 20 ft. wide; and, at a height of 14 ft. 6 in. from the floor, a cove, springing from a cornice on each side wall, reaches the height of the tie-beam of the principals (18 ft. 8 in. above the floor), at a distance of 4 ft. 6 in. from the wall, thus leaving a space of 11 ft. between the coves: in this space a ground-glass internal skylight or ceiling is introduced, which, however, is raised 2 ft. above the highest level of the cove, or 20 ft. 8 in. from the floor, the ridge of this skylight being pitched 1 ft. higher, thus giving a fall of 2 in 11 to each side, in order the more readily to carry off any moisture that may occur from condensation. The space between the highest point of the cove and the eave of the ground-glass light is filled in with perforated panels for purposes of ventilation.

The coving is not returned at the end of the room, but cuts out on the end walls, in order to preserve the skylight in its integrity throughout the entire length of the room, and that the side walls nearest to the ends may receive an equal amount of light with that under the middle of the skylight. As regards the quantity of light admitted, it may be stated shortly that the opening for the admission of light is exactly half the floor area of the gallery, the two areas being in the large rooms 920 ft. and 460 ft. respectively: thus, floor 46 ft. × 20 ft. = 920 ft., light 46 × 10 = 460 ft.; and it is also precisely equal to the entire surface of either wall which might be made use of for the hanging pictures.

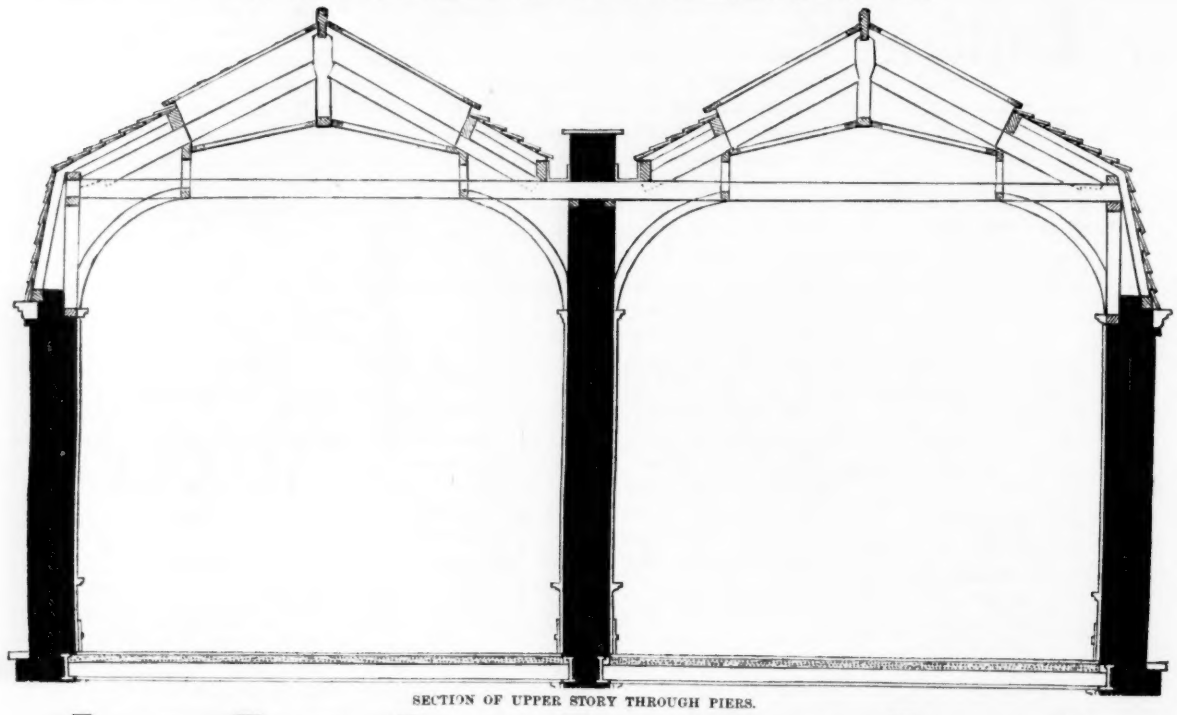
"The possibility of reflection or glitter," says Capt. Fowke, "is guarded against in the following manner:—Supposing a mirror to be hung against the entire surface of the wall, it will be seen by referring to the diagram (Fig. 3) that a ray of light from the skylight, at its extremity S furthest from either wall, striking that wall at A at a height of 11 ft. 6 in. from the floor, will be reflected (the angles of incidence and reflection being equal) so as to reach the eye E_1 of a beholder (say 5 ft. above the floor) standing midway between the walls, or at a distance of 10 ft. from the mirror; and, consequently, that all the rays striking the mirror below that point will fall below his eye; or, in other words, that he will not be able to see the image of the skylight at any point in the mirror below 11 ft. 6 in. from the floor; and that, as a matter of course, there will be no glitter on the wall, or on pictures hung on the wall, below that point, while the surface of the wall above the 11 ft. 6 in. point will reflect the image of the skylight.

It will be seen from the diagram that this point, which we may call the glitter point, alters according to the position of the beholder; for instance, at E_2 5 ft. from the wall the glitter point is at B, 9 ft. from the floor, while on coming closer (that is, to E_3, or within 2 ft. of the wall) it will be found to have descended to C, at a height of 7 ft.: on the other hand, by receding to a distance of 15 ft. the wall may be seen without glitter to a height of 13 ft. Looking again to the same diagram, it will be seen that, apart from all considerations of reflection, a person desiring to see a picture at a height of 11 ft. 6 in. would naturally retire to a distance of at least 10 ft. from it, and the same may be said of the other heights and positions shown in the sectional diagram: so that in any position in which a person can conveniently examine a picture in this gallery, he may be sure of having the surface of the picture free from glitter."

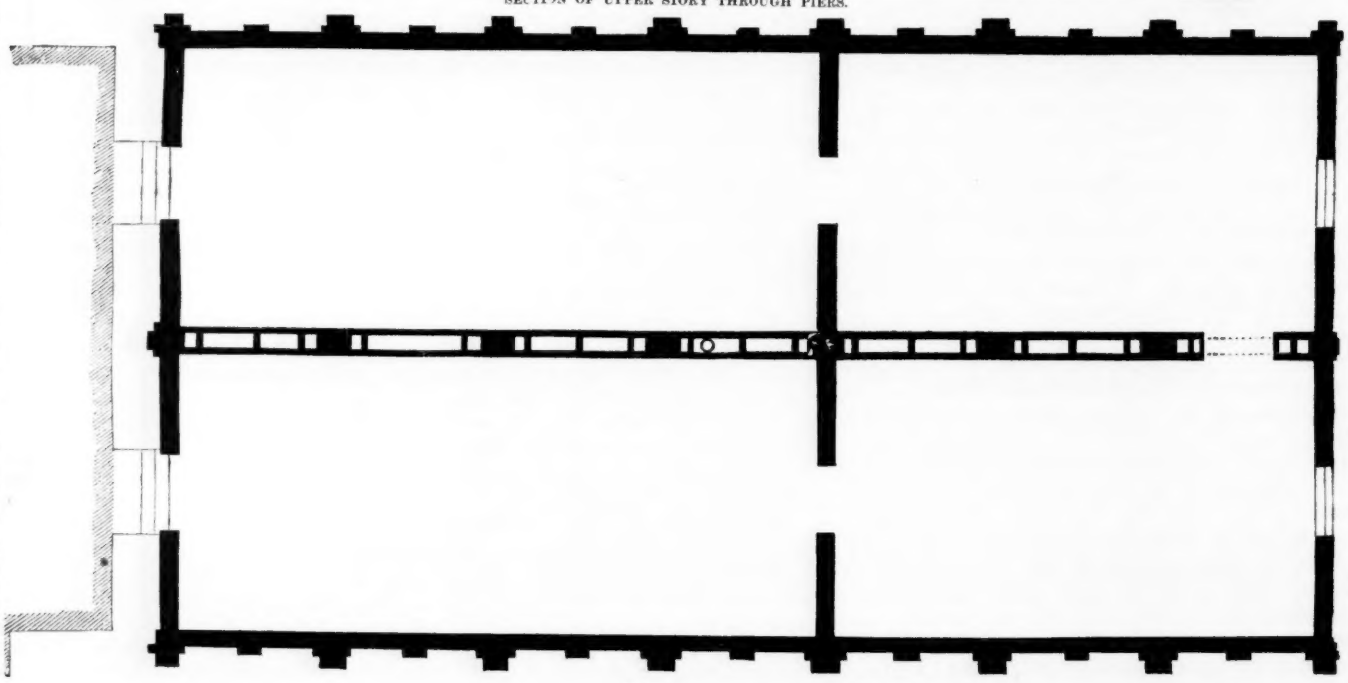
For night, gas is introduced, so as to light

* "A Description of the Building at South Kensington, erected to receive the Sheepshanks Collection of Pictures." By Francis Fowke, Captain, Royal Engineers. London: Chapman and Hall, 193, Piccadilly.

BUILDING FOR THE SHEEPSHANKS COLLECTION, BROMPTON.



SECTION OF UPPER STORY THROUGH PIERS.



PLAN

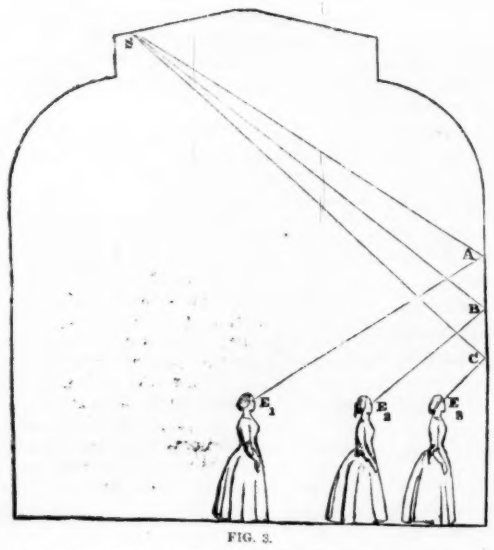


FIG. 3.

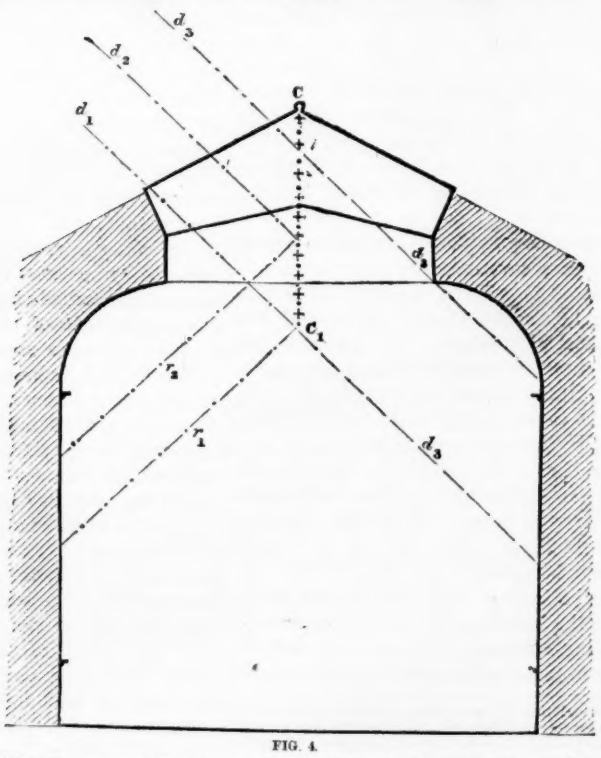


FIG. 4.

the pictures as nearly as possible at the same angle as the daylight.

For this purpose a horizontal pipe is carried the entire length of the gallery at a height of 18 feet from the floor, directly under the centre of the skylight, and from this pipe a number of fish-tail burners are projected on small brass elbows at each side of the pipe, and distant from it about two inches. The line of gas-burners is made to coincide with the intersection of the two rays from the extremities of the skylight, which strike the opposite walls respectively at the highest glitter points above alluded to; and it is argued that by such an arrangement all danger of glitter from the gas-light is avoided.

The gas-burners are placed in such a position with regard to the horizontal pipe that its shadow from each line of lights is projected on the opposite side. The mode of heating adopted, is a modification of the arrangement patented by Mr. Gurney, whereby the air is *damped* as well as heated, and to this we may refer more fully on some other occasion.

The ventilation of the rooms of both floors is provided for by means of outlets for the vitiated air in the upper part of each room; those in the upper floor or picture-gallery being obtained in the upright panels that, as before mentioned, intervene between the tops of the ceiling coves, and the eaves of the interior ground glass skylight. Through ornamental perforations in these panels the vitiated air passes into the space between the ceiling and the roof, from which it is carried off by an extracting shaft heated by the iron flue of the heating apparatus, and by a gas-burner in the summer time. Louvre-boarded ventilators are also provided, opening into this space, as an additional escape during hot weather, or when the building is more than ordinarily crowded. There are 224 perforated panels, and the sectional area of the openings of each being about eighty square inches, will give, after a due allowance for friction, an effective opening for ventilation of, in the aggregate, 112 square feet. In the evening when the gas is lighted, and when the influx of visitors is always much the largest, a part of the ground-glass light is made to slide back, and a corresponding opening is effected in the outer skylight, and by this means an additional foul-air escape is obtained, with a sectional area of 210 square feet.

So far as any decoration externally has been attempted, the decorative materials that have been used are bricks of three colours, black, red, and cream-coloured; cast iron in eaves, gutters, and stack-pipes; roofing tiles of two colours, viz. red and cream-colour; and, lastly, a species of surface decoration approaching to fresco painting, and known in Italy by the name of *sgraffiato* work, of which many old specimens may be seen in Florence, and a modern example by Professor Semper, at Hamburg.

The screen wall which forms the sunk panels over the lower windows being only 9 inches in thickness, are covered externally with cement, so as to exclude the weather; and advantage was taken of this circumstance to try an experiment with the method of decoration alluded to above, as a ready and appropriate means of ornamenting flat surfaces when finished with such a material. This is done by first covering the entire surface with a dark-coloured cement; a very thin coat of cement of the tint required for the ground of the panel (in this case grey) is then applied, also over the whole surface to be operated on, and while this latter is wet the pattern or ornament is scratched on, or rather cut through, the grey cement, till the line cut is of sufficient depth to reach that of a darker tint underneath; and a pattern is thus obtained which is as durable as the cement itself.

A scroll ornament, medallions containing portraits of artists, Reynolds, Gibbons, Opie, Barry, &c. with dates and names of their works, are the elements used. Internally, the walls are coloured a sage green; the dado and work are painted in three shades of grey. Names of painters are introduced in the cornice.

The cost of the entire building is stated as follows:—

"Construction, including heating and ventilating	£4,500	0	0
Minton's floor-tiles.....	132	13	0
Artists' designs for, and execution of decorated panels ...	140	0	0
Gas-fittings.....	81	0	0
Terra-cotta casing for girders and open-work cornice ...	95	0	0
Total.....	4,948	13	0"

Summing up the result of experience here, Captain Fowke thinks that in another picture-gallery it would be an improvement to substitute iron for wood in the construction of the roof, retaining however the present covering of tiles, or employing slate, but not iron, for that purpose. Of this there can be no doubt, if the building is to be considered fire-proof. He thinks, too, that in admitting the hot air to the picture-gallery, it would, perhaps, have been better to have introduced it in such a way as to spread it out horizontally over the floor, and perhaps also to have multiplied the points at which it was admitted, so as to avoid the great rush that sometimes takes place at the single opening in each room which now serves to admit it. And he is of opinion that in an atmosphere like London, where a great deal of impurity is present, the better way of ventilating a picture-gallery would be to supply it with air *by mechanical means*, in such quantity that it should always be, as it were, in a state of repletion or compression. "The advantage of such a method would be, that at any opening the air would have a constant tendency to escape from the building; at each opening of the door a current would set outward, which could easily be regulated to a given strength, and thus the entrance of outward air and its accompanying impurities would be entirely prevented." Another improvement needed is wider doorways. The doors, in the gallery we are considering, are too narrow for the occasional crowds to which public exhibitions are liable.

Before concluding, we must note the arrangement which is made to guard against the possibility of too much sunlight striking on the pictures. White calico spring blinds have been fixed immediately under and parallel to the outer glass skylights; and these have the effect of subduing the light generally in the gallery. Captain Fowke suggests that where a gallery, constructed as this is, runs in a direction approaching to east and west, the pictures on the north wall could only be protected by darkening the room to such an extent as to be detrimental to the general lighting of the gallery, and more especially of the pictures on the opposite or south wall; and that this might be overcome by having the gallery provided with vertical blinds, one reaching from the external to the internal ridge, and another in extension of this coming down below the ground-glass light to a sufficient distance to intercept all direct sun-rays from the hanging part of the north wall. The obvious effect of this arrangement would be to cut off a portion of light from the north wall, and at the same time to throw by reflection an additional quantity on the hitherto darkened wall. In the accompanying diagram, Fig. 4, in which c, c, is the blind, the direct rays are shown by the dotted lines d_1, d_2, d_3, the part of the pencil between d_2, d_3, is entirely intercepted, and that between d_1, d_2, is reflected to the south wall, in the direction shown by the lines r_1, r_2.

We desire very much to see collections of pictures open to the public, formed in all our provincial towns: the absence of them is a disgrace to our governing class,—a disgrace to the governed. The call for them will presently come, and in arranging for the erection of galleries for the purpose, the building at Brompton, containing the Sheepshanks Collection may be usefully looked to, and will be found suggestive.

TO PHOTOGRAPHERS.—A correspondent asks us to suggest that photographs might be taken of St. Paul's Cathedral from Cannon-street, giving a view that may hereafter be unattainable.

MR. SYDNEY SMIRKE'S SECOND LECTURE ON ARCHITECTURE AT THE ROYAL ACADEMY.

FROM earliest times, the near relationship that the three arts of painting, sculpture, and architecture bear towards each other, has been recognised and admitted. Various are the ties which connect this sisterhood of art; but we may state, broadly, that it is form which constitutes the tie connecting our art with sculpture, and colour with that of painting.

On the last evening that I had the honour of addressing you, I confined my attention chiefly to the former: I propose to devote the present evening to a cursory inquiry into the bearings of colour on the art of architectural design.

How and why it is that the peculiar quality of colour, which is inherent, more or less, in every visible object, should please or offend the eye, has engaged the attention of many philosophic inquirers; but I shall not regard it as any part of my business here to detain you with such theories,—theories which, if well founded, might almost reduce the pleasures of the eye to a mathematical formula.

It is enough for me, here, to say that it has pleased the Creator to endow colour with certain attributes, which it behoves every artist, whatever may be the particular branch of art he cultivates, to make himself thoroughly acquainted with, inasmuch as these attributes exercise a powerful influence on all the arts of design.

It may seem somewhat presumptuous in me, within these walls, to attempt to discuss the principles of colouring; and I can unfeignedly say that I do so with very great diffidence. But the path of the architectural colourist is very different from that of the painter: his field is far narrower, and his objects simpler. The painter has to deal with refinements far beyond the reach of the architect. Although the principles that guide them are necessarily the same, their modes of working out these principles are so widely different that I think even here I may be held excused if, addressing myself exclusively to the young architect, I point out to him how colour is to be called in to assist him in the production of his effects, and what appear to me to be the general rules which should guide him in the use of colour.

Now, before doing so, I think it well to take a retrospective view of the efforts of architects of past times with reference to the use of colour in their works.

To inquire into the mode of colouring adopted by builders in the earliest ages would be a task, not without interest it is true, but which belongs not to the present occasion. Such an inquiry would be too archæological, and not sufficiently practical for our purpose here. The Egyptian and Assyrian builders seem to have dealt with colours as children in art; and, although some have supposed themselves able to discern a superior knowledge and a refined practice of colouring in the earliest and least cultivated ages and races, I confess I can anticipate little benefit from an attempt to inquire into their principles; if, indeed, any principle they really possessed.

The case, however, is far otherwise when we descend to the period of Greek art.

The learned are much divided in their opinions as to the extent to which Greek architects availed themselves of colour in exterior architecture; and, indeed, until comparatively late times, little regard was paid to the subject. The earlier revivers of Greek art seem scarcely to have heeded it; and the natural effects of neglect and exposure, more or less, to the action of the atmosphere during 2,000 years, have of course been so nearly to obliterate all vestiges of colour that it is not surprising that the earlier observers should have overlooked them. Authorities differ, even now, so widely as to the extent and character of the colouring practised by the Greeks, and the existing visible traces of colour on ancient remains are so scanty, that he would be a bold theorist who would venture to speak with confidence of the general practice of the Greeks.

This is (as I have already said) no fitting arena for such inquiries: I shall, therefore, abstain from detaining you on the vexed question of ancient polychromy. I may remark, however, that the existing evidences of the use of bright colours in Greek sculpture are such as to preclude all doubt of the practice in that department of art. I would instance the red colour known to have been used to mark the bleeding wounds of Greek warriors in archaic sculpture, and the blackened pupils of their eyes. Indeed, the fact of bronze bridles and javelin heads occurring in marble sculpture of the highest class, affords presumptive proof of the use of colour; for detached spots of bronze, unsup-

ported by some accompanying colour, on a pure white marble, are hardly reconcileable with the refinement of Greek art. The somewhat lavish use of gold and ivory in Greek sculpture, at least in its later days, seems also to favour this inference.

Seeing that on the composition of Greek temples, the architect and the sculptor worked so strictly together, that the two arts were animated, as it were, by one soul, there seems ample ground for conjecture that the architectural features were treated in the same way as the sculptural portions. In truth, undeniable traces of bright colour have been occasionally detected, and few collections of Greek antiquities are without them. We need go no farther for evidence than that afforded to us by the careful, trustworthy, and judicious investigations of Mr. Penrose. But even on that distinguished testimony, we need not now rely; for, thanks to the successful labours of Mr. Charles Newton, architectural painted fragments of the date of Alexander have been recently brought home, and deposited in our national museum.

That this strong colouring extended over large surfaces in Greek architecture is, however, by no means proved. At the same time I admit that, much as the pure crystalline translucency of Parian marble would lose by any artificial stain, yet the force of evidence renders it undeniable that at least light general tints were largely used. It would be tedious here to enter into a disquisition that has already filled some volumes: I will confine my remarks to the testimony of my own experience. The coarse limestone of which the finest temples of Magna Græcia were built appears to have been covered with a thin coat of fine calcareous plaster: this plaster was itself so perfectly white, that it is quite impossible to believe it to have been left unstained. It is not to be supposed that the susceptible eye of a Greek artist could have endured, in that brilliant atmosphere, so painful an object as a chalky, opaque, white building.

Nor need we wonder that the Greeks should have painted their external architecture. I have on a former occasion alluded to the sort of filial piety with which young Greek art adhered to its early reminiscences, and the deference with which it long continued to regard its prototypes in Egypt and Assyria, where, unquestionably, the brightest colours were profusely employed.

By a somewhat remarkable coincidence, the "vermilion beams" of a royal palace are named both in the "Iliad" and in the "Book of Jeremiah;" and there is, indeed, abundant evidence to satisfy us that reds, blues, and yellows, in dazzling superabundance, characterised the immature art of those early periods.

What the Greeks taught by their example, we may safely assume their Roman pupils readily practised. But the Romans introduced a new element of decoration in the profuse use of materials naturally coloured.

Bronze and gilt decorations had, as we have seen, previously enriched the external architecture of Greece; but the Romans, by adding coloured marbles, gave an aspect to their structures to which architecture had previously been a stranger.

The use of these marbles, applied both to architecture and sculpture, became a passion in Rome; and the mountains of her remotest colonies were ransacked for the sake of their many-coloured contents; and the mechanical dexterity acquired by Roman artists in veneering with these precious materials, in the thinnest possible laminæ, seems to have far excelled the workmanship even of the present day.

When the tide of conquest rolled eastward, the use of colour in architecture acquired renewed force. It is worthy of observation, that those Eastern regions, where all the works of nature seem steeped in the brightest colouring, are peopled by races whose greatest æsthetic characteristic has always been a love of brilliant colouring. Their architecture and their costume alike attest their prevailing taste. Nor was it characteristic of any special race or cast. It was a geographical, rather than a national, distinction. Whether Jew or Gentile, worshipper of Vishnoo or of Mahomet, all alike delighted, and, I may say, still delight, in the most brilliant colours, seeking the highest gratification of this sense by re-producing, in the texture of their dresses, or on the surface of their edifices, those precious gems which were so strongly associated in their minds with the symbols of rank, and wealth, and power.

There can be little doubt that it was from these Eastern sources, far more than from the surviving examples of Roman art, that Mediæval builders learnt the value of colour in architectural decoration.

It is probable that during the least advanced ages of our art, even this taste found but slight encouragement beyond the rude efforts of mural decorators in mosaics, or the painted effigies of saints and their symbolic accompaniments. As art, however, advanced, the builder again recognised the value of colour in enhancing the effect of his works.

But now the influence of climate on the predilections of the eye came into operation. Mediæval art was born and nurtured amidst the grey mists and under the clouded skies of the north, and art assumed a graver tone, a more sombre character.

Whilst the exterior architecture of Byzantium, of Persia, and of India, shone in all the splendour of coloured decoration, we find it but timidly and very moderately used in the North of Europe; and this distinction is perceptible even within very geographical limits. In France, for example, whilst on the early Mediæval buildings of the more northern provinces few traces of external coloured decoration occur; mosaic and tesselated works are not unfrequently found in those provinces where ancient colonies from the East had imported an exotic taste.

In Germany; I am aware of but few indications of such mode of coloured exterior ornamentation; whilst, on crossing the Alps, we begin to find, at Venice and elsewhere, rich marble incrustations very frequently used, evincing the intimate relations of the Venetian States with Byzantium and the East. In England there is but little evidence of any taste for exterior colour in architecture; unless, indeed, we class under this species of superficial ornamentation the practice, prevalent in the eastern parts of England, of chequering the surface with flint-work, inlaid or embedded in the masonry of the walls; offering a strong contrast in tone, if not in colour, to the general hue of the building.

Closely allied to this mode of decoration are the interlacing courses of brickwork; but the practice was unknown (in England, at least) until the latter days of Middle Age art, although we see such interlacings at Venice in the fourteenth century. The horizontal courses of variously-coloured materials, a mode of decoration to which recourse has been had of late in this country, are a prevalent feature of the buildings of parts of Italy and in the East; but, as far as I know, they are a peculiarity foreign to English art. I must, however, admit that these observations on the general absence of bright colours in northern architecture require much qualification, when we consider the decoration of the interior of buildings. There, the love of colour which more or less characterizes the natural taste of all mankind has, I think, in all climates, and at almost all periods, been largely indulged Even in the most unfavourable times, artists in mosaic have been found to illuminate, with more or less of skill, the walls of ecclesiastical buildings; and their art was among the earliest to participate in the general improvement of architecture.

Perhaps interior coloured ornamentation reached its acme when the Sainte Chapelle in Paris, and subsequently, when our own St. Stephen's Chapel, were built. But it should be noted that these beautiful examples were preceded by the chapel of S. Francesco at Assissi, where an example was set of the most elaborate and brilliant mural illumination—an example which, by its own intrinsic beauty, as well as by the reputed sanctity of the spot, probably influenced all Christendom. I am aware that the crowning decorations of the Italian example, being by the hand of Giotto, bear a date later than that assigned to the Sainte Chapelle at Paris; but the building was erected long before; and, having been executed with incredible rapidity, it may be fairly presumed that the mural decorations were at least far advanced before the Parisian work by Montereau was begun. The beautiful building at Assissi may, therefore, I think, be safely said to have led to the splendid rival displays which I have already adverted to in Northern Europe. Abundant further examples might be adduced illustrating the passion for bright colouring which distinguished the artists of probably the whole period called the Middle Ages throughout Europe; and when the style that had prevailed for some centuries began to recede before the revived spirit of Classic art, architectural colourists still retained the practice of their art, although they gave it a new direction.

Italy still took the lead. There we find coloured marble incrustations, both external and internal, more prevalent than ever, and panelling in various coloured marbles and jaspers is one of the most strongly marked features of the quatrocento and cinque-cento schools. I may mention, as striking and well-known examples, portions of the Ducal Palace, and adjacent buildings, at Venice; the Church of Sta. Maria dei Miracoli, in the same city; and that of Sta. Maria, at Florence, with very many other remarkable buildings.

Nor did the use of coloured marbles cease for a long time to be a fruitful source of beauty and variety in the architecture of Europe. It was in the beginning of the sixteenth century, that the pleasing style of interior decoration became prevalent, which has been named after the great master whose skilful hand and fascinating example first recommended it.

The story told by Vasari, of Raffaelle having derived the idea of his arabesques from the casual discovery of ancient Roman decorative paintings, is familiar to all. We may readily admit the probability of the story, for the subsequent disinterments at Pompeii and Herculaneum, and in the Roman States, abundantly testify to the general practice of ancient Roman art. This epoch is a memorable one in decorative art. It is curious to trace over all Europe, and through three centuries, the permanent, wide-spread influence, that the school of Raffaelle has exercised over the whole domain of art.

I have detained you long enough on this preliminary sketch of the history of my subject. It is time that I should proceed to a consideration of the theory of colour, and its application to practice in our art.

An inquiry into the theory of colour is attended with this happy peculiarity: its first principles are simple, certain, well defined, and, I may add, clearly laid down before us by the hand of nature. There are but three simple colours. All the researches of science or art, we may be well assured, will never reveal to us a fourth.

Simplicity seems to be one of the fundamental laws of the creation. Notwithstanding the infinite variety that pervades the whole material world, first principles and original elements seem to be, as far as we are permitted to comprehend them, few and simple. In chemistry, for example, every new discovery, every onward step taken in the path of knowledge, tends, not to multiply, but rather to reduce in number, the original elements of matter. So in this science of colour, the same beautiful simplicity presents itself to our view. Amidst all the gorgeous, ever-changing variety of tints with which the whole creation is clothed, from the rainbow above us, down to the beetle's back beneath our feet; and amidst all the artificial hues that the most capricious artist, or the most inventive chemist, has ever devised, the fact still remains certain and indisputable that there are but three pure colours; and, therefore, it is, I repeat, that this science of colour charms us by its extreme simplicity.

It is in the manipulation of these three simple elements that the whole art of the colourist lies: and even in the study of this manipulation, there is an absence of any bewildering complexity. As there are but three pure colours, so there can be but two classes of mixed colours, viz.;—1st. Those composed of any two of the pure or primary colours. 2nd. Those composed of all the three primary colours.

It is obvious that there can be no other compound colours, besides those comprised in these two great classes.

The colourist's whole care is therefore limited to the study of three pure colours, and two classes of compound colours, in their affinities and mutual relations.

I must, however, here admit, that the straightforward simplicity of our path ends; for our limits very widely expand when we enter upon an analysis of these compound colours. Their range is, in truth, infinite; for, in the class of secondary compounds, there is no limit to the degree of difference in the proportions in which any two primary colours may be blended: so in the class of tertiary compounds, there is no limit to the degree of difference in the proportions in which the three primary colours may be blended,—no limit, that is to say, except such as is imposed by the limited faculties of the human eye. Therefore you will perceive that, as in chemistry, a few simple elements are infinitely diversified over the whole material world; so, in the science now before us, we soon find that the narrow limits of our elementary studies open out upon a very wide field, when the colourist comes to make a practical application of them.

I believe I cannot well proceed further without here introducing to you a diagram,—familiar, indeed, in its principles to all, but which it seems very necessary to have before us when we are discussing this matter.

It is in this circle of colour that our whole subject lies,—the magic circle within the charmed

limits of which the painter performs his incantations, and practises upon our senses.

I must again beg to remind you that in what I have to say on this subject, I venture to address none but the students in architecture; and it is solely on the application of colour to the purposes of mere architectural decoration that I venture here to speak.

When Alison says that there is no such quality as inherent beauty in anything, he enounces a very bold, and I may venture to say a very doubtful principle; but there appears to be at least some approach to truth in the dogma, when applied to beauty in colour. I will not go so far as to say that there is no inherent beauty in any one colour or hue, although it must be admitted we are greatly influenced by prejudice in our estimation of this kind of beauty. The circumstances of its application materially affect our judgment.

Burke cites the colour of a dove as one of its peculiar beauties; but if we argue from thence that therefore dove-colour is an intrinsically beautiful hue, we must be prepared to admire it on the female cheek, or the hair, or the lip.

I am not, however, venturing to deny that there may be an inherent property in particular hues to cause us pleasure in the contemplation of them; for philosophers tell us of certain physical effects, vibrations as they are called, on the organs of the eye, produced in various proportions by various colours; but this is a subject far too recondite for our contemplation here, and probably of little practical value. I allude to it only to show that it is not prudent to speak *ex cathedrâ*, or *ex tripode architectonico*, on this subject. Still I am sure I may with safety say, broadly, that colours are so dependent for their effect on association, that they derive an immeasurable accession or loss of power to produce pleasure, according to the art with which they are placed before us with reference to each other. In this respect there is a remarkable analogy between colour and sound. We can hardly say with strict propriety that any one note in music is beautiful; but associate it with others into a chord, according to certain laws of harmony, and the most uneducated ear can at once appreciate the result. This analogy between sound and colour is familiar, and has not escaped the observation of natural philosophers.

It is, therefore, of the first importance to the student, who desires to cultivate decorative art, to make himself well acquainted with the principles which should guide his practice in the choice and arrangement of colours; for it is a gross fallacy, and yet a very prevalent one, I believe, among those who have no practical acquaintance with art, to suppose that pleasing arrangements of colour are fortuitous; or, at all events, dependent more on what is called fancy than on any definite rule or theory.

It is to these principles, therefore, that I must now call the attention of the student.*

* To be continued.

TASTE IN MANUFACTURE.

THE PRINCESS ROYAL'S WEDDING-CAKE.

YOU have from time to time directed attention to certain matters which may not, in connection with the high qualities of art, be generally considered of very great importance, and yet which, like a feather in the wind, show the direction of the current. In painting and architecture,—in fact, in all imitative and decorative arts,—the chief aim should be directed towards the imitation of Nature, or improving, without disguising, forms and objects which it might be considered necessary to decorate.

In the olden times, flagons and other vessels were elaborately and beautifully decorated, but this decoration was never carried to such an extent that it was scarcely possible to discover the intention for which each object was required.

On the old-fashioned dinner-tables there were various "sotelties," which were placed on the tables rather for the amusement and astonishment of the guests than for use; but then these were only a sort of thing to be looked at rather than tasted: the viands and even choice dishes on these tables were not disguised; "ye pheasaunt," and the other comforting denizens of the earth, air, and water, were garnished, but not disguised.

A sirloin of beef has often been "a dainty dish" to set before the courts of English kings and queens, but that famous roast-beef of old England was never made a "soteltie;" and other favourite dishes were made to stand in their natural shapes. These thoughts are raised at the present time by the sketch of the Princess Royal's wedding-cake, which has been published, made by the French confectioner to her Majesty, and is so overdone by decoration that few would recognise for what purpose it was intended.

According to the *Illustrated London News*, the wedding-cake was between 7 and 8 feet in height, and was divided from the base to the top into three compartments, all in white.

The upper part was formed of a dome of open work, on which rested a crown. Eight columns on a circular plinth supported this dome and inclosed an altar, upon which stood two Cupids holding a medallion, having the Princess Royal on one side, and Prince Frederick William of Prussia on the other; and busts of the Queen, the Prince Consort, the Prince of Prussia, and the Princess of Prussia were placed at equidistant bases projecting from the plinth.

The middle portion contained niches, in which were a number of statues, including those of Innocence and Wisdom. These statues were separated by broad buttresses of an ornamental character, the upper part decorated with festoons of orange blossoms, and surmounted by an imperial crown.

Rows of pearls bordered each division of the cake, which was divided into a certain number of portions, and each portion was decorated with a medallion of the royal bride and bridegroom.

The plateau contained fourteen gilt baskets and vases of silver gilt, the former elevated on golden tripods, and all filled with flowers.

Is not this gilding the lily? A CAKE.

WATER SERVICE FOR THE POOR.

A HINT TO POTTERS.*

PERMIT me to invite the attention of the members of the Institute for a few minutes to a subject—humble, indeed—most unattractive, and most unæsthetic—yet a subject which, being of great economic and sanitary importance to the public, must not be considered unworthy of the attention of any man, still less of the Institute of British Architects.

In very few large towns are the inhabitants able to indulge in the use of an unlimited quantity of water. The wasteful, and, indeed, dishonest, practices of many, often preclude the possibility of this indulgence, even when the natural supplies of water do not set a limit on its use.

In places, as in London, for example, where the service of water is necessarily confined to a short period daily, it becomes a matter of very great importance to provide, in each dwelling, receptacles large enough to supply liberally all reasonable wants of a family for at least twenty-four hours: there are in truth few provisions of equal importance to public health and comfort. Yet I believe that an inquiry into the actual state of things would show that, not only are these receptacles, in the dwellings of the humbler classes, far too scanty, but in a multitude of cases wholly wanting. It is in the hope of suggesting some alleviation of this evil, that I beg to address these few remarks to the Institute.

As far as I know, there are but three kinds of cisterns in general use. First, there is the water-butt,—a rude and primitive contrivance, insufficient in capacity, and liable to speedy decay, and in its decay destructive to the quality of the water, causing it to teem with all manner of noisome creatures. Secondly, there is the lead cistern,—a very costly receptacle when substantially constructed, and one which is liable to the serious objection of very frequently poisoning its contents. Thirdly, the slate cistern,—a vast improvement upon its predecessors, and a contrivance with which we might well rest contented, were its cost such as would admit of its general adoption in the humbler classes of dwellings.

The purpose of my communication is to suggest a fourth material, and to press upon manufacturers the expediency of at once coping with and overcoming the difficulty of making cisterns of a strong, coarse earthenware, of ample size, and at a very low price. I will not suppose it to be beyond the reach of manufacturing skill to supply this great desideratum.

I have seen and measured earthenware cylinders 2 feet 5 inches in internal diameter, forming the lining of a well more than 2,000 years old, amidst the ruins of ancient Selinuntum,—and these cylinders were as sound and as serviceable as when first made. Is it unreasonable to expect that the bakers of clay in the nineteenth century might improve a little upon the potters of Magna Græcia? Surely we ought to excel the ancient Greeks in mechanical skill, although we may have to succumb to them in æsthetics. A vessel of this material, 3 feet square and 4 feet deep, would hold upwards of 220 gallons. What an immeasurable benefit would be conferred on the poorer classes if such a vessel could be supplied at a cost within the reach of their purses! Even if their means were too scanty to admit of their paying water-rates, such a reservoir would be of signal service were it provided merely to receive rain, which comes down to us for nothing (except our thanks, and even that is a debt not always paid). But I will not admit of the plea of poverty; for I doubt whether any one who cannot pay some moderate water-rate ought to hold a house at all. Consider the cheapness of water. I have the best authority for saying that at least one great water company in London supplies 1,000 gallons for sixpence. Therefore, in a house containing ten persons, each of whom is supplied with ten gallons daily, the company's charge on the house would be 6-10ths of a penny,—that is to say, 6-100ths of a penny for each person for ten gallons. Whereas each of these persons would pay about thirty-four times as much for a single pint of poor unwholesome beer: in other words, bad beer is about 2,700 times dearer than good water. I may add, that in the event of any very great extension of the supply of water, it does not seem unreasonable to anticipate a still lower rate of charging,—at least to the poorest class of customers.

I hasten to close my remarks; but, before doing so, I would venture to throw out another suggestion in the form of a query. Why should not the supply of water to a house be made compulsory? I do not see that it would be more unconstitutional or arbitrary to do so than to make the supply of light and air to a house compulsory, which the Building Act does. So also the Legislature has not hesitated to make it compulsory on all builders to form drains. Ordinary paving and lighting rates are, in fact, compulsory charges on individual householders for the public good. It is true that were such a course adopted it would become necessary, in order to prevent water companies from abusing their privileges, to control, and limit by enactment, their rates of charging; but no company would venture to object to such a limitation, were every shareholder compelled to be a customer. The quantity of water required to be supplied would probably be graduated according to the size and rent of the house; but I submit that to compel by special legislative enactment a reasonable quantity to be provided in each house would be a most salutary exercise of that power which a Government holds only for the public good. The larger a city becomes, and the greater the aggregation of its inhabitants, the more urgent becomes the duty of the Legislature (I say it with great deference) to provide, by stringent measures and by a vigilant control, for the health and well-being of the people. SYDNEY SMIRKE.

* Read at the Institute of British Architects, Monday, February 22nd.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the ordinary meeting on Monday, the 22nd, Mr. J. J. Scoles, V.P. in the chair, various donations were announced, including, from the chairman, a specimen of the concrete used in the foundation of the Great Exhibition of 1851.

The Honorary Secretary read a memorial presented to Parliament by the Institute of British Architects, praying the acquisition by purchase on the part of Government of the Soulages Collection, for the national instruction and improvement of the people in fine art and manufacture.

A paper communicated by Mr. Sydney Smirke, on the Water Supply of Towns, was read, and will be found in another page.

A paper was afterwards read by Mr. G. R. Burnell, C.E. "On the Modern Applications of Hydraulic Limes and other Cementitious Materials to Constructive Purposes."

Mr. Ashpitel said he had paid some attention to the subject of the hydrati n of lime, of its absorbing carbonic acid from the atmosphere, and forming another carbonate of lime. To prove this you must have something like synthesis as well as analysis. In other words, suppose the lime to be burnt and then slacked, it absorbs the carbonic acid, and becomes carbonate of lime. But the process ought to be repeated. It ought not to become mortar, but chalk, and lime ought to be made of it again, but we could not do that perfectly. The fact was, we were not thoroughly acquainted with the chemistry of lime. The lime used by the Romans in making their splendid mortar was chiefly from the marble of the Apennines. They had no sand, and the only thing they had was puzzalano, and it was from this that they made masses almost like monoliths. It had been asserted that this puzzalano resisted the action of sea-water; but artificial puzzalano did not. In the concrete, which was commonly called rubble work, in Rochester Castle, the work of the Middle Ages, they did not appear to employ hydraulic lime. He had examined many of the buildings, and found that they used common chalk in a very fluid state, and it worked admirably. A remarkable feature in Rochester Castle was, that one of the winding staircases was composed of nothing but concrete. It appeared to him that hydraulic lime was not used in the Middle Ages.

The first person who gave his serious attention to lime as used in large waterworks was Smeaton. Wren also gave it a great deal of attention. We could now make admirable hydraulic limes, and a great many limes from Portland stone. Some years ago experiments were made with 3 per cent of common clay, but however well it resisted the action of ordinary water, it did not resist that of sea water. In his opinion, concrete now-a-days was much too hastily got up. It should rather be put together in the form called *béton* by our French neighbours, giving it time to be thoroughly integrated. With all our rich fat limes, we did not succeed in making the hydraulic composition made by the Dutch, for there was wanting what he would call a *tertium quid*, viz. manipulation [A Voice,—Elbow grease] in well mixing it. He had often thought that there was one element in puzzalano which was absent in all our make of hydraulic lime, viz. oxide of iron, which existed largely in puzzalano; and by infusing this into our concrete we should no doubt greatly improve its characteristics and manufacture. Messrs. Grissell had found a wonderful effect to arise from throwing scrap iron into their concrete.

Mr. Burnell agreed as to the want of more elbow grease, but our labourers in this country did not sufficiently apply it. Oxide of iron was doubtless a valuable ingredient in hardening cementitious material; but then it was a mightily expensive one; and he thought that by using a proper proportion of Portland cement with our concrete, we should get a better result for our money.

Mr. Kerr considered that a concrete or cement formed by blue lias lime with smiths' ashes or metallic sand, formed one of the hardest known in building, and cheaper than by the introduction of oxide of iron. Though we might thoroughly understand the chemical question of lime, we did not as thoroughly understand the mechanical question of mortar.

Mr. Wyatt called attention to Mr. Smirke's communication on water supply, and thought that in the present state of the potter's art the construction of cisterns, &c. on a much larger scale in one piece would be found practicable and highly useful.

It was submitted in the course of a subsequent discussion that it was found impracticable to make larger earthenware vessels than at present, owing to its being so sensitively affected, even to breakage, by extremes of temperature, but that the same objection did not apply to vessels of zinc with wood casings, or of galvanized iron.*

Mr. Burnell thought the right solution of the water question was a constant supply, and that ultimately we should come to a system of selling water by meter and measure.

It was announced that on March 1st, a special meeting will be held, to consider the award of the Royal medal and prize medals of the Institute, and also the munificent donation of Lord De Grey, their president, of 200*l.* worth of shares in the Architectural Union Company.

* Our own experience of galvanized iron for cisterns is not satisfactory.

PREVENTION OF DRAUGHTS FROM DOORS AND WINDOWS.

Having had a dangerous draught from a room door completely obviated by a very simple process, it is but an act of ordinary gratitude to the inventor, and of proper care for the welfare of our readers, to give some account of the means of prevention. These means then simply consist of a slight beading, screwed or nailed round the door-frame, with a narrow slip, or ribbon, of vulcanized india-rubber, fixed in a groove at an angle, so as to form an elastic spring to press against the door when closed, and thus to make the joints air-tight all round. The beading at the foot of the door is so hinged and affixed to the door itself, as to open much like one of the pieces of a parallel ruler, only protected between the two slips, and having a spring between its two pieces and the india-rubber ribbon running along the outer edge, so that as the door closes, a protruding heel of the bead, as it were, is caught by the frame and pressed so as to open the parallel slip and cause its rubbered edge to press upon the floor or carpet, thus efficiently preventing all access of air or draught. Not only draughts, but dust and noise can thus be readily excluded, either by windows or doors. The beading can be had, it appears, either by the foot or yard, or applied where wanted. The invention is patented by Mr. J. Greenwood, carpenter, of 10, Arthur-street West, London-bridge, and completely effects what it proposes.

THE FALL OF CAERHOWELL BRIDGE.

CORONER'S VERDICT.

The Caerhowell suspension-bridge, on Dredge's principle, it will be recollected, lately fell, from end to end, into the river below, while a wagon was on it, and one of the persons accompanying the vehicle was killed. At the inquest it was resolved to adjourn till a proper examination of the bridge had been made. Mr. Evan Hopkins, C.E. examined it, and reported to the jury on the subject. He afterwards gave evidence at the adjourned inquest, and Mr. Dredge, jun. was also examined, as well as Mr. Penson, the county surveyor.

Mr. Penson stated that he had strongly objected to the adoption of the suspension principle, although he had not decidedly negatived it. He had warned the county magistrates, however, that he could not be responsible, but they had told him *they* would. Cheapness of construction appeared to be the chief object in view. He had suggested, too, that the work should be tested at the foundry as it proceeded, but the reply to that part of his report was,—"We suppose you want a journey to Edinburgh every fortnight or so." There was no one employed by the county to test the iron. The bridge, however, was erected under his inspection, by the contractors, Messrs. C. D. Young and Co. Mr. Dredge's estimate (2,591*l.*) was 1,000*l.* under that for a single arched iron bridge. The contractors were bound to keep the bridge in repair for seven years. It fell by the giving way of the longitudinal beam, caused by the friction wearing down the bolts; or the heads had become broken by the continued vibration. He considered that the contractors ought to have looked after such defects: he pointed out to them that the bridge ought to be periodically examined.

Mr. Dredge said he was one of the sureties for the contractors, but was not otherwise responsible, except for the design of the bridge. He had been concerned in the erection of about seventy of such bridges: some had been twenty-five years in existence, and were still standing. He had examined the state of the bridge, and reported to Messrs. Young and Co. on it.* The only conclusion the witness could come to as to the cause of the fall was that some of the bolts had accidentally become detached and displaced, so weakening the fishing joint, and making the beams weak at the junction, so that the plates separated. A periodical survey alone could have prevented this. The county surveyor ought to have seen that the iron was tested, and the work sufficiently carried out, for by the contract it was to be done to his satisfaction, and the contractors had his certificate to that effect. In one case a county surveyor had reported to him that a bolt of a bridge had become detached, and the defect had been remedied at the cost of one shilling. That bridge was erected on the same conditions as the Caerhowell one. His attention had never been called to anything wrong in this bridge. The part that gave way was no doubt the longitudinal beam, and the bridge then crumpled up in the centre. The bridge had not failed at the outset, as was alleged. It had been, to some extent, wrongly put together, the person who did so not thoroughly understanding it; but his father remedied this: there was no increase of strength that he knew of.

Mr. Hopkins strongly condemned the bridge, as far too weak a structure for the heavy traffic constantly passing over it. Where the roadway, too, was constructed in so much heavier proportion than the upper part of the bridge, the passing over of heavy traffic was unsafe and dangerous. He had seen a great many of these bridges, but not one so large and with so heavy a roadway. The sectional area was strong enough, but not with bars of the size. A great deal of the iron was hot blast, and of very inferior description. Extra ballast had been recently put on. Some of the rods, no doubt, first gave way, and the rest were not sufficient for the emergency. He disapproved of the strength of the rods, but not of the principle of the bridge. The bridge was not strong enough for ordinary purposes.*

The jury, after a lengthened consultation, returned the following verdict:—"We find that the death of Richard Grist was caused by the falling of the Caerhowell Suspension-bridge on the river Severn, that bridge not having been constructed or maintained in such a manner as to afford security to life and safety to property passing over in the ordinary way of traffic; that some of the defects consisted in the inferior quality of the iron, and workmanship badly performed; circumstances which might have been avoided had there been proper supervision by a person acquainted with the original plan and mode of construction. We feel it a duty not to separate without expressing our opinion that the present fatal catastrophe shows the necessity of greater vigilance on the part of the county authorities, and that safety and durability, rather than economy, should in future guide them in all public works."

* In this report it was said "The following table will show the admeasurements of some of the principal suspension bridges constructed in England, the bearing strength of the iron estimated in each at ten tons per square inch:—

	Span.	Deflection.	Width.	Section.	Bearing weight per foot of platform.	Average.
Menai Bridge	579	43	28	260·0	1·883	
Hammersmith ...	422	29	30	180·0	1·662	
Norfolk.....	284	20	28	81·0	1·184	1·312
Union Bridge	387	30	18	37·68	·562	
Caerhowell	150	19	20	25·844	1·73	1·73

"By which," continued the report, "it appears that the section of iron used in the Caerhowell bridge is 32 per cent. greater than the average section of iron in the four bridges above mentioned, built by the most eminent engineers in this class of works, viz. Telford, Clark, and Brown."

"There are 26 bars of iron in the chains, and the towers each 1¼ diameter, presenting a total section of 25,844 inches, and the centre of the bridge consisted of—

1st.—4 bars, each	1¼ inch,	3·976
2nd.—4 bars, each	⅞ inch,	2·405
3rd.—4 bars, each 6 inches by ⅞ inch, deducting 1¼ for bolt holes,		15·75
Total section.....		22·131

The weight of the bridge, with load, as nearly as I can estimate at the time of the failure, was as follows:—

Weight of iron suspended	32 tons,
Timber	28
Gravel	60
Load	9
Total.....	129

The deflection of the chains was ⅓ the chord line: the horizontal tension would therefore be 129 × 1 = 129, which, distributed over a section of 22·131, would give a load of 5·82 tons per square inch, and which, as the iron should be able to sustain a bearing strain of 10 tons per square inch with safety, it cannot be supposed that less than 6 tons would break it."

SIR C. BARRY AND THE NEW PALACE OF WESTMINSTER.

A parliamentary paper just issued contains further correspondence between Sir C. Barry and the Board of Works relative to the expenditure by the former, as architect, on the New Palace at Westminster. The result of this correspondence appears in a note addressed by Sir B. Hall to the Lords of the Treasury on the 11th of January last. In this note the Commissioner of Works informs their lordships that he had intimated to Sir C. Barry his refusal to apply to Parliament for any further grant towards defraying the cost of the works for the completion of the New Palace until he (Sir C. Barry) should have furnished him (Sir B. Hall) with certain accounts, specifications, and estimates, to enable him to give some definite and positive assurance to Parliament as to the ultimate cost of the building, which at present it is quite impossible for him to do. Sir B. Hall further informs their lordships that he had requested Sir C. Barry to give no further orders for any work in the palace to be proceeded with, the cost of which could not be defrayed out of the balance of the vote for the current year, and that he (Sir C. Barry) would, with the least possible delay, furnish the Board of Works with the accounts, specifications, and estimates already alluded to. On the 20th of January (nine days afterwards), the First Commissioner of Works received a note from the Treasury (through the medium of Mr. C. E. Trevelyan), expressing their lordships' entire approval of his conduct in the matter.

The objections taken by Sir B. Hall are, that Sir Charles Barry has greatly exceeded his estimates for various portions of the work, and had entered into special contracts for works without the knowledge of the First Commissioner, contrary to express desire.

PROPOSED CHURCH AND CLUB BUILDINGS, WIMBLEDON, SURREY.

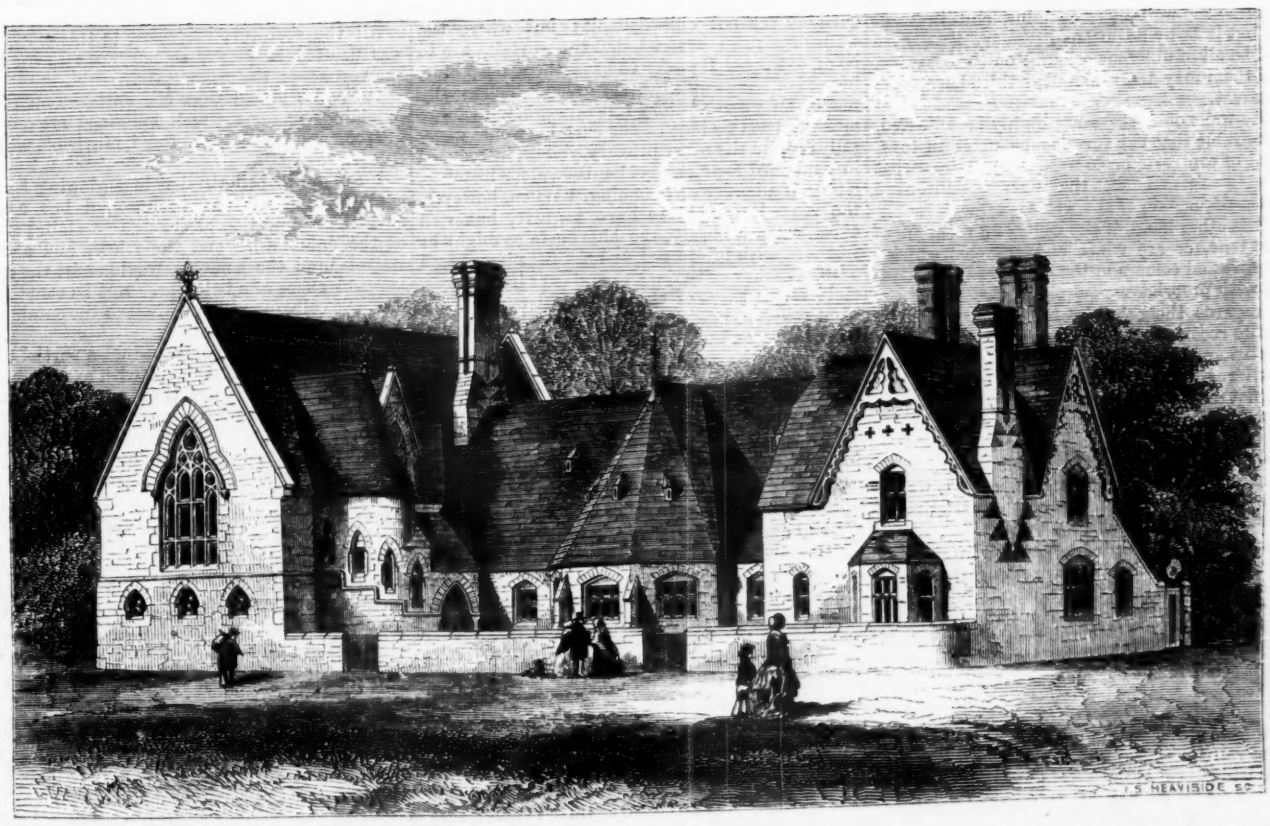
A new church for Wimbledon is now being built from the designs of Mr. S. S. Teulon, of Craig's-court, architect; and, under the direction of the same gentleman, it is proposed to erect there buildings for a "Village Club." Annexed we give a view of the church and the design for the Club buildings.

The church has a nave and aisles, the tower standing east of the nave, with north and south aisles thereto; and this forms the chancel. Beyond this, eastward, is a sanctuary. The church is to accommodate nearly 600 persons, and will be built in vermiculated work, in Kentish rag-stone. All the discharging arches, within side, will be in brick in three colours, and the walls finished in plaster and "stencil fresco." This latter, we are informed, has not before been adopted.

The Village Club will stand at the opposite end of the parish, and will consist of a reading-room and lecture-room, coffee and committee room, and a residence for the matron. This group will be of brick, grey in colour, relieved with bricks of other colour. The lecture-room will be used for public meetings also.

The object of the club-room is the moral improvement of the working classes, by providing a room where they can read periodicals, have coffee, and, if they please, smoke. There is a resident who will provide coffee, but nothing else, the object being to keep young men as well as old from the public-house.

* In an additional report made since the inquest, and published in the *Shrewsbury Chronicle* of the 19th inst. together with a full report of the adjourned inquest, Mr. Hopkins says,—"On further inquiry I found that the bridge had given way in the middle soon after the opening, and that the contractors had been obliged to raise the roadway and apply stronger diagonal bars," but that, "even with this additional strength to the weak and defective part of the bridge, it gave symptoms of insecurity, which were partially corrected by trussing."



NEW CHURCH, AND PROPOSED VILLAGE CLUB-HOUSE, AT WIMBLEDON, SURREY.——MR. S. S. TEULON, ARCHITECT.

ON COLOUR.*

IN considering the question of harmony of colour, the tertiaries become essentially valuable. They have the same relation to the secondary colours, as to *shade*, that the primaries have to the secondaries as to *light*.

Citrine is to dark violet as yellow is to light violet; russet to dark green as red to light green; and olive to dark orange as blue to bright orange.

The above supposes a certain equality of contrast, and continues the system of chromatic equivalents, in which each of the secondaries is neutralized by that tertiary in which the remaining primary predominates.

By a proportionate adjustment of the primaries, with the secondaries or tertiaries, harmony of colour is produced.

It may be laid down as a principle of decoration, that one colour should dominate; that this dominant should be a primary or secondary; and that the other colours must be subsidiary to it.

Beware of confusing the laws of contrast with those of harmony,—of using in equal proportions contrasts of bright red and bright green, bright yellow and violet, or bright blue and bright orange, without modifications, which will neutralize one or the other. I speak the more earnestly of this, because I believe contrast to be a popular error of the present day.

In the majority of cases, the most perfect and beautiful harmony is produced by employing neutralized hues of a colour for the larger masses, and then giving freshness, cheerfulness, and beauty to the whole, by the introduction of the primary or secondary colours, that may form the proper equivalents to the prevailing colour; and it should be always remembered, that the eye is never satisfied with any arrangement of colour, unless the three primaries are present in some shape or other.

Though I have spoken more particularly of colours as related to each other, it must be borne in mind that there still remain the black and white; the most intense in contrast, and most valuable in their power of giving effect to the other colours.

In carrying out decorations, it will be found that all colours have two kinds of harmony,—that of analogy or sympathy, and that of contrast. For instance, we will suppose the walls of a room to be of a soft green colour, and that curtains are required. Two colours are open to us;—on the one hand a rich yellow brown, which is the softer harmony, or on the other hand a warm maroon.

In another case, we will suppose the walls are lilac or peach-blossom: we can then have either a warm green or gold-colour curtains, and the ground of the carpet should be maroon.

There are three masses of colour to be combined in rooms,—the walls, the curtains, and the carpets; but it is by no means necessary that these should be all of different colours: on the contrary, two of them may accord, and the third harmonize by contrast.

If the walls of a room are highly ornamented, it is desirable that the curtains be quiet in tone, and not of contrasted colours, and that the carpet preserve a subdued effect that does not interfere with the decoration of the walls.

On the other hand, if the walls of a room are of a quiet tone, or are white and ornamented with gilding, varied colours in the carpet may be introduced with propriety.

As regards the colouring of carpets, I should generally recommend the ground to be of a deep rich retiring colour, such as maroon or green, and the patterns, whether in ornament or flowers, to be as flat as possible, and entirely without cast shadows. The Indian carpets are at all times quiet, retiring, and harmonious in their colouring, and worthy of study for the distribution of their ornament. Above all colours in a carpet, I abominate drab, reminding one of the varieties of shades between mud and dust.

When rooms are painted or papered in tints of colour, the combination necessary to carry out a pleasing effect is sufficiently simple and easy; but even in these great finish may be given, by the way in which the cornice of the room is brought out, by the introduction of the colour which prevails in the curtains, or relieving it with other colours complementary to those on the walls.

In the woodwork of our rooms, it seems to be too generally considered, that it is to be either a tinted white, or grained in imitation of some wood. Now, I do not go so far as to proscribe graining on all occasions; but I do say that it is far too often employed. It would be more pleasing, and quite as economical, to use a deep brown, or a maroon, or a chocolate relieved with light-coloured lines, taking care to face up the work carefully, and to varnish it. Above all, however, I like the real wood, even if it be only deal: for this, if well finished by the joiner and kept clean, will, when varnished, have a handsome effect, and can be readily ornamented to any degree by painting dark lines upon it: the wear of this kind of work is beyond any painting.

Again, on walls of staircases, or entrance vestibules, or dados of rooms, imitations of marble are painted, and very beautifully painted too (for our English artists in this work excel their French competitors); but these imitations are adopted, not always because they are appropriate or particularly required, but because, that being varnished, they wear well, and nothing else is suggested. I think, however, that in a moderately sized house, where quiet taste is appreciated, stencilling in geometric patterns in light colour on a dark ground, or, *vice versâ*, is preferable to marbling, which, if done in an inferior manner, is a most unsightly sham. In some public rooms I lately decorated, I had occasion to carry out both effects, and I decidedly prefer the stencilled pattern, the arrangement of which I will describe.

The walls of the vestibule are in two shades of sage green: the lower part about 4 feet 6 inches high, is painted warm black: on this is stencilled geometric ornament of a brown gold colour, leaving about as much ground as ornament. Above this black is a border of maroon red, on which is a grey Vitruvian scroll: the walls have dull maroon marginal lines, and the cornice is vellum colour, with the black and green and maroon introduced as relief to the enrichments. The curtains are maroon red. All the tones are very low; but the black gives freshness to them.

Men employed like myself are often asked, what is the best ground for pictures? My opinion would, in some measure, be guided by the aspect of the room and other circumstances; but generally speaking, I should say that if the room is large, and the pictures of bold colouring, crimson-red is the best. If the room is moderate in size, quiet green is a good colour; or, as a variety, a warm brown leather colour; but the depth and richness of the tones must depend on the condition of the pictures. At the Manchester Exhibition I advised a subdued maroon colour for the Gallery of Portraits, which were, on the average, low in tone, and a sage green for the walls of the side galleries.

For the walls of galleries of statues, I think warm deep colours decidedly desirable. For rooms of prints, a citron or fawn colour; and for photographs, a crimson or rich brown leather colour.

For walls coloured a subdued green, deep red curtains are not objectionable; but where the walls of a room are red, and the curtains are to be of one tone, I prefer to have them deep blue, instead of the complementary green, which usually makes an unsatisfactory contrast when in large masses; but this blue of the curtains would generally require the other primary, yellow, introduced in a subdued form, as a golden-brown, for instance, either as a border or trimming. When, however, the room is wanted to have a grave, but rich effect, as for a library, the blue curtains might be trimmed with bright red, and the floor be covered with a Turkey carpet, which is always harmonious, and the gilt backs of the books will supply sufficient relief in addition to what may be given by the cornice and woodwork, or other architectural features of the room.

Occasionally there may be some particular object in a room requiring a corresponding modulation of the colouring,—as a large allegorical painting on a ceiling. Sometimes we are obliged to use what would be called discords in music, but, if properly carried out, they in each art produce, perhaps, the most interesting harmony.

I had once to fit up a very large room in an old castellated house in which the ceiling was divided by large beams into fifteen compartments, in each of which was a large oval painting of some cardinal virtue, on deep olive ground. The room faced the south. Portraits were to be arranged on the walls. On these was hung a paper of a bold green flock pattern, on brown and gold ground. The beams, which were much enriched, were painted brown oak colour, the enrichment being picked out the colour of light wood, and relieved with maroon red and gilding. The panels of the ceiling surrounding the large ovals were enriched in low relief. We hesitated at these panels: they were our difficulty. A strong colour was necessary, to prevent the ovals looking a spot, so we painted the panels blue, rather modulated in tone, picked out the ornaments a subdued vellum colour, parts being gilt, and painted an irregular margin that surrounds the ovals a maroon red. The effect is thought to be satisfactory, though an antiquarian critic has rather loudly exclaimed at my putting a blue ceiling to green walls; but I refer him to plate No. 70 in Mr. Grunner's beautiful work,—a ceiling in the Palazzo Vecchio, at Mantua,—where he will find a greater sinner than I, for that is painted in full shades of blue and green and gold.

You can lay down no precise laws as to what colours shall be brought together. Discords can always be made to modulate, if you but know how to do it. I once heard a most learned man observe that "science is a collection of laws, but knowledge is a collection of facts;" and there are facts which experience teaches us, but which it would be difficult to explain by a reformer to the laws of harmony, though these laws are just, sound, and indisputable.

Occasionally a wall is required to be ornamented, and yet the ceiling, on account of pictures or other circumstances, must be very low in tone: in this case the colours should be so contrasted as to give effect to each other without disturbing the quiet tone desired.

Hitherto we have been considering the principles of contrast and harmony in colouring, or its application in simple forms under ordinary circumstances. I propose now to allude to decorative works of various periods where these principles are illustrated.

The Egyptians had a full knowledge of the powers of colour, and employed it to increase the effect of their sculpture, which on the walls or columns was in low relief. Sir Gardiner Wilkinson says that the walls and ceilings of their houses were richly painted, but of the effect of their colouring we can only judge by the tombs.

The Greeks, no doubt, carried the science of harmonious colouring to a condition commensurate with their perfection in the other arts, but the specimens existing are too few to explain to us their system with any certainty: what we do know is, that they applied polychromy very extensively to their architecture, as well as to their statuary. According to an opinion quoted by Mons. Hittorf, the colouring in the Parthenon was as follows:—All the main architectural features, such as the columns and entablatures, were coloured yellow: all the surfaces of the walls of the portico, and the cella, and all the parts behind, were painted red: the tryglyphs and the mutules were painted blue, the guttæ of the latter with red spots: the grounds of the metopes, of the frieze, and of the tympanum of the front were painted red: the mouldings, fillets, and grand cyma were ornamented in different colours, the mouths of the lions' heads being red and the eyes blue. The ceilings were decorated by blue grounds with gilt stars.

All the sculpture belonging to this monument was painted in proper colours, such as the flesh, the vestments, the armour, &c.

It is also stated that the enrichments of the mouldings of some Greek buildings are only engraved, and would therefore be invisible without colour.

I can quite believe that in a glowing Eastern sunlight, and with no background but a clear sky, the application of colour to certain portions of the entablature and the frieze, and also the walls behind the columns, would assist the architectural effect of a building. But I cannot fancy that the columns and the whole of the entablature were covered with paint.

I will hazard the opinion that a partial use of polychromy may be employed with excellent effect in modern buildings, and that if executed in a way not to be affected by the trying climate of our country, it would add greatly to the effect of the architecture: for instance, if the back-ground of a sculptured tympanum were formed of vitrified tesseræ, we will suppose of a blue or a dull red colour, this substance would preserve its freshness for a considerable period; and I would add a margin of gold half-an-inch wide and about 2 inches from the edge, to preserve an appearance of surface, otherwise the colour might look a void.

The medallion heads at Hampton-court Palace on coloured ground give, by simple means, a very great relief.

In the string courses of buildings, terra-cotta or tiles, of appropriate ornament, in precise and distinct colouring, would, I think, have a good effect. I know this has been done, but I have not noticed any examples where the tiles appear to have been designed for the particular situation; and the colouring generally is confused. Certainly I should never recommend the following directions as to the colouring of his house given by a French *bourgeois gentilhomme* to his architect: "You shall paint my walls in red, yellow, blue, and orange; my

* By Mr. John G. Crace. See p. 122, *ante*.

blinds in green; my window-frames in red; my plinths in indigo; my cyma in violet; and now we must find some colour for the cornice."

We will next refer, though it must be briefly, to some of the glorious specimens of decoration which still exist; and first among them, in antiquity and interest, those of Pompeii. Perhaps in them we see handed down to us those principles of colour which prevailed in the Grecian era of high art, however they may be diminished by the comparative inferiority of the style of art which then prevailed; still, to us who know not the better thing, they carry with them a most valuable and beautiful lesson in the art of decoration and science of colour.

It should be remembered that these specimens are only fragments of decoration; that, owing to the manners of the time, the chambers were small; and from the climate a dull light was preferred; but yet, taking them with all their disadvantages, I look up to them with the utmost admiration for their wonderful varieties of combinations of colour and for the grace, elegance, and fancy in the design of the ornaments.

I regret that having them bound I cannot exhibit more specimens than what are now arranged here; but even these will show the excellencies to which I have alluded, and will enable you to appreciate the tastefulness of the ornaments and the skill with which various opposing colours are brought to harmonise together. There is one specimen I always particularly admire, and I have had it painted about the size of execution, in order the better to show how harmoniously the yellow and the black are brought together. Of what value is that grey on the lozenge to the yellow in the frieze? It has the effect of quieting and cooling the contrast. Recollect that black and yellow bird, where Nature has taken the same beautiful means of subduing the contrast by the delicate margin of grey round the eye and beak of the bird: who can call that a barbarous system of colouring?

Let us next examine the beautiful mosaic from the "casa de Goëthe," the infant Bacchus, seated on a panther. How well are these colours, pale gold, grey, green, and russet, all modulated to the black ground. But it is unnecessary to go through these illustrations, they each to an inquiring mind give a composition of harmony as complete to the eye as a melody of Beethoven or Mozart would to the ear.

The discovery of the decorations of the Roman baths about the time of Raffaelle caused the introduction of what is now called Arabesque ornament, though it was then named Grotesque, from the grotto-like look of the baths.

While admiring the fancy and elegance of the ornaments in the Loggia of the Vatican, judging simply from Volpato's coloured delineations, I should say that there is a deficiency in the contrasts of colour, and that the ornaments have a confused effect. There is one part, however, that always appears to me of peculiar beauty; and that is the groups of fruit and flowers suspended by red cords, on a rich blue ground, painted on the wall-surface, round each window, something like the illustrations.

It is unnecessary my attempting to describe the various decorations by Raffaelle, Giulio Romano, and others, at the Villa Madama, Mantua, &c. because the illustrations in Mr. Grunner's two excellent works give them so perfectly. But I cannot help alluding especially to the beautiful works at the "Certosa," near Pavia. There will be found assembled some of the finest specimens of decoration that Italy has produced, by a variety of artists, but principally by Luini, Fossano, Perugino, and Guercino. I was there myself for too short a time, and I warn any student who proposes to pay it a visit, to arrange for a long stay, for it is worth it. Remark particularly the decorations of the vestibules, the grouping of the charming children by Luini, and the beautiful harmony of the colouring. Look at the decoration of one of the arms of the transept, the graceful disposition of the main lines, and the elegance of the ornaments; the tertiary colours taking up the architectural lines, and throwing into such freshness and beauty the paintings and the smaller portions of primary colouring; the roof all glowing with rich ultramarine and gilded stars.

The library of the cathedral of Sienna, decorated by Pinturicchio, is a work to be noticed for the arrangement of colour in the decoration of the pilasters and the deep richness of the colouring of the ceiling. At Verona, the church of Santa Anastasia gives a specimen of decoration of the fourteenth century, of a peculiar character. The walls are a stone colour, and all the architectural lines, such as the arches and the frames of the windows, are given by blockings of red bricks. The vaultings of the arches are decorated in Arabesques, in the style of missals of this period, with centre figures in circles. The walls have also a series of horizontal friezes, painted in ornaments of the same style.

I must mention the Duomo of St. Mark, at Venice, though it is impossible for me this evening to describe its magnificence and its solemn grandeur, so impressive, so different from any other church I have seen. The walls are of various marbles up to a certain height: above that they are a mass of glowing gold mosaic, covered with figures and ornaments of various colourings, but all combining in one subdued harmony. The valuable work of Mr. Digby Wyatt faithfully gives some specimens of these mosaic ornaments; but, to the best of my belief, the church of St. Mark has never yet been fully illustrated.

Having thus briefly alluded to some of the decorations of Italy, I will now pass to Munich, where the taste and energy of one man, the late King Louis, has raised up a school of art of such high repute. It is now nine years since I was there, and perhaps other monuments have been completed since then; but at that time the principal works consisted of the two Royal Palaces, the All Saints' Chapel, the Glyptothec, the Pinacothec, the Church of St. Louis, the Royal Library, and the Basilica of St. Bonifacius. I speak more particularly of this school, because the decorations of the principal buildings depend especially upon colour. Of these, one of the earliest, and I think the best, is the All Saints' Chapel (Allerheiligen Kapelle), designed in some degree like St. Mark's, at Venice, though much smaller. The upper walls and ceilings are painted in a series of subjects, by Hess, on a gold ground. The church is divided into three great compartments by arches, and in the centre of each is a dome. The decoration of each of these arches is given in one of the illustrations, and I call your attention to it as a most successful and beautiful piece of decorative colouring. You will perceive that the ground is a warm maroon, ornamented with green scrolls enclosing a series of grey margins, interlaced with gold, and dotted at intervals with spots of red and blue, which sparkle like gems. This panel of maroon is bordered with margins of blue and gold, relieved with red lines; and this decoration forms the soffit of the main arches, and acts as a frame to all the painting around.

The church of St. Louis I thought far less successful in its decoration. The defect is, that the general tone of the walls is too grey: there is a want of freshness and of good contrasting leading lines. The colouring of the ceiling, however, tells with good effect; and there are a series of ceilings to the side chapels, which are beautiful studies for colour: each of them is a lesson for showing how contrasts of colour may be made to work with harmony.

The staircase of the Royal Library is to be noticed for its arrangement of colouring. It will be seen by the illustration that each compartment of the principal ceiling, which is semicircular, and each of the side ceilings, which are vaulted, have the primaries, blue and red, alternated in their leading features. The whole decoration of this staircase has an extremely good effect. The reading-room is to be remarked for its extreme simplicity, and for the good judgment with which the leading lines of colour are introduced. Perhaps there is not twenty shillings' worth of gold in the room, and yet the small gilt stars on a black ground give great life and finish.

The Basilica of St. Bonifacius is architecturally on the model of that of St. Paul, at Rome. The upper walls are covered with beautiful frescoes, by Hess and others, arranged in a series of subjects. The drawings give the principal decoration, which is on a gold ground and framed by ornaments in fawn colour, spaced with red and black: these latter colours predominate in the lower part of the church, and are modulated by the blue of the ceiling, which is studded with stars.

At the Pinacothec, I will allude to the decorations of the loggia, or side corridors, of which there are illustrations: they appear to have been inspired by a study of Pompeian decorations, but the artists have completely failed. There is a want of that melody and depth of contrast which gives such beauty to the ancient work. And the ornaments are deficient in graceful form and colouring.

There are two subjects I have not yet touched upon, and which time will not permit me to speak of now. They are, firstly, of the Alhambra, so full of grace and beauty, so rich in ornament and colour, which the devoted energy and talent of Mr. Owen Jones has made so familiar to us; and, secondly, as to the colouring of Mediæval work. I feel unable to concentrate in a few brief sentences what it would be necessary to say on such a subject, but I will express my opinion that colour adds greatly to the dignity and beauty of the interior of a Gothic church. Confined within proper limits, I cannot understand the objections that are made to it. I would at all times let the construction be evident; let the material of a column be its decoration; let the leading lines of the architecture be well defined; but in the wall spaces, why should we not have what is beautiful in harmony of colouring? I cannot sympathise with those who admire the beautiful stone of the inside wall of a church, or the purity of whitewash. For me, I admire rather a glorious monument like the Sainte Chapelle, which, with all its faults, I look upon as a most beautiful work.

I fear that I have intruded on your time too long, that I have said to many of you much that you already knew, perhaps better than I have told it you. I have endeavoured to lay before you briefly and clearly the simple elementary laws of colouring, and to give instances of their application.

Careful observation of the beauties that nature offers to our notice, and persevering study of the principles of colouring, and of good examples, may lead us to excellence: no precise rules can alone teach us. They are only the alphabet and the grammar of the language; the notes and the measure of the music. The stirring sword-song or the soothing melody come from the heart that feels and the mind that can compose them.

DESCENDING FLUES.

CONSUMPTION OF SMOKE.

You have occasionally found room in the *Builder* for remarks on smokeless fires, and other matters relating to the prevention of smoke. As all such notices induce thought, and suggest improvements, permit me to call attention to the following. It was found necessary, some time since, to fix a stove in the board-room of the Crystal Palace. There being no chimney or flue near, some consideration was necessary as to the disposal of the unconsumed products of combustion and burnt air. The clerk of works, Mr. William Earie (under whose able supervision the first and last column of the Crystal Palace was fixed), soon decided to take both to an existing flue in the tunnel under the Crystal Palace, distant 1,500 feet. As my drain-pipes offered facilities for the removal of the soot at stated intervals, they were selected and laid, and the result is all that could be desired.

This fact induces me to pursue the subject, and to ask why, in all large public or other buildings, the flues could not be made descending, and by means of underground flues, such as I have described, carry the "black products," that now disfigure and destroy, to the *underside of a clear coke fire*, formed in the bottom of an ornamental shaft, common to all the flues, and built in any convenient situation? The coke fire would effectually filter or consume the dark smoke from the different fires, and create a draft in the shaft at the same time, which might also be made available as a means of extracting vitiated or stagnant air from the buildings in connection with it.

GEORGE JENNINGS.

A HINT AS TO COVENT-GARDEN.

Passing through Covent-garden market yesterday, with Mr. E. Barry's drawing of the proposed new flower-market, which I had just seen at the rooms in Suffolk-street, fresh in my mind, it occurred to me that a semicircular glazed covering over the central avenue, in lieu of the present heavy ordinary unmitigated timber roof, would be a most decided improvement. Indeed, when the new flower-market is erected in the immediate vicinity, the incongruity of the two will, I think, be so obvious, that I cannot but suppose that the duke's agents will see the propriety of introducing the alteration I have mentioned. We all know the excellent effect of the French *galeries vitrées*, and how superior they are in cheerfulness to our heavy-ceiled arcades, whether Burlington, Lowther, or the deserted Exeter.

While in the neighbourhood of the "Garden," let me ask you to think of giving us a plan of the new theatre now in carcass. You had its front engraved for us, but I should like to know, very particularly, what are the arrangements made for EXIT should the public at any time think fit or be compelled to endeavour to quit it *en masse*. I must hope there are *many more* vomitories provided

in the sides of the building than those in the entrance-front, where horses and carriages must inevitably block up the gangway to unfortunate foot passengers. ARCHITECT.

BUILDERS' BENEVOLENT INSTITUTION.

A MEETING was held at the London Tavern, on Wednesday, the 24th instant, to reconsider Mr. Henry Dodd's offer of a plot of freehold land, near Slough, for the building of almshouses.

At a previous meeting it had been determined by 13 to 11, our readers will remember, to accept the offer, but the attendance having been small, the directors wisely determined to call another meeting on the subject.

After some discussion the following resolution, moved by Mr. R. Forest, and seconded by Mr. Thos. Piper, jun. was carried:—

"That inasmuch as there evidently exists considerable difference of opinion as to the eligibility of accepting the offer of Mr. Dodd, of land at Slough, this meeting desires to express its approbation of the course taken by the Directors in seeking a more decided expression of the opinion of their constituents on the question.

That the distance from London of the land offered would involve the removal of the almshouses too far from the metropolis, thus removing them out of the way of their best friends, and causing to the funds of their almoners heavy expenses on every visit. This meeting, therefore, is of opinion that the offer of Mr. Dodd should be respectfully declined.

That this meeting cannot but express its great admiration of the munificence which prompted the gift, and desires to record its thanks to Mr. Dodd, with a hope and in the belief that the same spirit of benevolent kindness which led to this expression of his goodwill will continue him as a friend to the charity, and ensure his aid when more favourable circumstances may enable them to carry out such purposes as those to which he has invited them."

The annual ball given on Thursday, the 18th, at Willis's-rooms, St. James's, in aid of the funds of the Institution, was well attended, and will, we hope, conduce as much to the advantage of the Institution as it did to the enjoyment of those who participated in it. May all find themselves,—

"Happier, as kinder, in whate'er degree,
And height of bliss, but height of charity."

THE LATE MR. THOMAS HAMILTON, ARCHITECT.

ARCHITECTURE has lost one of its brightest ornaments by the death of Mr. Thomas Hamilton, of Edinburgh, architect of the High Schools and of the grand lines of approach and thoroughfares on the north side of the town. He was also architect of the College of Physicians, and of several churches and other buildings, which do equal honour to his reputation, as evincing great genius, originality of conception and treatment, and power of mind. He was, moreover, a man of the highest integrity and independence of character. He died at his house in Howe-street, Edinburgh, on the morning of Wednesday, the 24th inst.

TRINITY CHURCH, EDINBURGH, COMPETITION.

SOME of the competitors desire that we should suggest that it would be satisfactory if those competitors whose plans are mentioned by the committee with "special commendation" were to have their names published. One correspondent says,—"Such a course was adopted in both the Lille and Constantinople competitions, and as such public mention will be the only reward these persons are likely to receive for a good deal of thought and labour, I imagine such a suggestion on the part of the *Builder* would lead to the names being forwarded to that paper." We will willingly make them public, should that be the case.

INFLUENCE OF ONE BUILDING ON OTHER BUILDINGS.

IF it be worth while again to draw attention to the subject of the influence exerted by the architecture of a large building over that of other and smaller edifices—a subject which has not yet been treated in the manner which its utility deserves,—I would beg to point out one of the means by which that influence may sometimes be detected: it has occurred to me in the preparation of the work which you were so obliging as to mention, p. 728, last year. The arms of Cerne Abbey, in the nave of Sherborne Church; those of St. Benet Hulme Abbey, in Thurgarton Church, and on the porch of North Walsham Church, are notes of patronage exerted in the county of the superior structure; but the arms of St. Edmundsbury Abbey not only occur at Beccles Church, but at Great St. Mary's, in Cambridge, and at Wood Ditton, in Cambridgeshire. Perhaps some of your readers may have the opportunity of comparing buildings known to have had connection of this sort; and it would, probably, be more successful to prosecute the inquiry in this way, than on the ground usually suggested, that of absolute vicinage without connection of patronage. Indeed, no one, to my knowledge, has yet used that ground with advantage, and perhaps the failure might be reasonably expected in most cases; whereas, I have never seen notice of any attention to the similarity of details between the mother establishment, in England, and its distant dependencies. The subject has been properly studied in France, and to some slight extent in Germany.

JOHN W. PAPWORTH.

ARCHITECTS AND THEIR SUBSTITUTES.

KNOWING your readiness and kindness in setting right the building trade and profession, I have taken the liberty, as one of your readers, of asking your opinion in the following transaction that has just taken place in our town.

The congregation of a certain chapel advertised for plans and specifications for an alteration and addition to the same, the successful competitor to have a premium of 15*l.* for the plan and working drawings. The design of A. B. was selected, but one of the members of the congregation being a surveyor is appointed to overlook the works. Bills of quantities are prepared under his direction, for the copy of which each builder (five in number) has to pay 15s. (and sign an agreement that the surveyor shall not be held responsible for their accuracy); the surveyor's charge, 2½ per cent. on the amount of tender, 1,376*l.*; 10*l.* 10s. for attested copy of plans and specification, and 2½ per cent. additional for surveying the works.

Is this in accordance with the custom or practice of respectable surveyors? Ought 10*l.* 10s. to be charged for copy of plan and specification in addition to the above per centage? and are those charges for the amount of work to be done just and usual? READING.

*** The whole transaction is irregular, and, it is to be hoped, unusual.

VENTILATION OF THE GENERAL LYING-IN HOSPITAL.

SIR,—As an old governor and member of the committee of the General Lying-in Hospital, and having some knowledge of building and the benefits of good ventilation, I have noticed your remarks regarding the ventilation of this hospital, which I regret did not come under my observation until Saturday, the 13th instant, or I should earlier have given you some information on the subject.

I am sorry you do not consider the Secretary's letter, published in the *Times*, as a complete and satisfactory answer to Dr. Rigby's statement. I can assure you that the ventilation of the hospital is a subject of much concern and interest to the managing committee, who have requested Mr. Jeakes, of Great Russell-street, to examine into and report to them his opinion on the subject.

It is true that Dr. Reid's system, which was introduced into the hospital some fifteen years ago, at an expense of 3,000*l.* proved not only inefficient, but positively injurious to the health of the patients.

With respect to the sickness and mortality to which Dr. Rigby has referred, I do not believe that it originated from the want of ventilation, but to the stoppage of the drains, and latterly to the state of the atmosphere, and the prevalence of disease incident to women at various periods in the metropolis.

The matter is, however, occupying the serious attention of the committee, and will I trust result in the remedying of any defects which may be found to interfere with the proper working of the ventilation in the hospital.

Palace-gardens, 18th Feb. T. GRISSELL.

CHURCH-BUILDING NEWS.

Colchester.—Important alterations are contemplated at the chief ecclesiastical edifice in Colchester,—St. Peter's church. Lithographed plans have been prepared from designs by Mr. C. F. Hayward, architect, and the committee are to commence building the transept, repewing the church, and erecting the new chancel arch, as soon as they have sufficient funds in hand, reserving the tower, and some portions of the work in the interior, for a future time. To effect this, they estimate that about 1,800*l.* or 2,000*l.* will be required. The amount at present subscribed is rather over 1,000*l.*

Ipswich.—The new parish church of Braiesworth was consecrated on Wednesday in week before last. This church, which is dedicated to St. Mary, and is constructed with rough flint, and Caen stone quoins and dressings, is in the Norman style of architecture, the east end being a semicircle, and lighted by seven small windows, the west end having one large ornamented window, and two very small ones: over the centre window is the bell-turret. The interior is fitted up with plain open benches, mostly free. The edifice was erected by voluntary contributions. It is built on a new site, more central than the old one. The old chancel having been in much the best condition is left standing, and will be used as a cemetery chapel. The architect was Mr. Lamb, of London; and the builder, Mr. Robert Hawkins, of Monksleigh.

Maidstone.—The church of St. Philip, Maidstone, has been consecrated. The edifice, which occupies a site at the end of Waterloo-lane, is built of the Kentish rag-stone of the neighbourhood, with Caen stone dressings. The roof, which is lofty, is surmounted at the east end of the nave by an oaken bell-turret. The principal entrance is from the north side, where the door is protected by an enclosed porch of oak. The whole of the building is exceedingly plain, the funds at command being limited, and is an imitation of the Early English churches, at the later period of the Pointed style. The windows consist of double lights, with trefoil heads along the north and south sides, a double-light window at the west end, and a three-light window at the east end of the chancel. The interior consists of a nave only, 82 feet long by 32 feet wide, with a chancel 14 feet long and 20 feet wide, separated from the church by a pointed arch. Minton's encaustic tiles, of an ornamental pattern, are used for the paving of the space within the altar-rail; the remainder of the church being paved with black and red tiles. The whole of the seats are open benches, and will accommodate about 500 persons. The church is lighted by eight brass five-light gasiliers, and warmed by one of Sylvester's patent cockles, fixed in a vault under the vestry-room. The cost of the site was 250*l.* the contractor's estimate for the erection a little above 1,800*l.* and the other expenses bring the outlay up to about 2,500*l.* Of this upwards of 2,400*l.* have been subscribed. The architect was Mr. J. Whichcord, jun. and the work has been carried out by Mr. Tompson, builder.

Sherborne.—A numerous meeting of the parishioners took place at the town-hall, on the 8th instant, to express their sense of the liberality of Mr. G. D. Wingfield Digby, in having undertaken to complete the restoration of the Abbey Church; and to adopt such measures for that object as might be deemed expedient. After some discussion, a committee was appointed to report on the subject. A subscription-list was opened for a fund for the addition of two new bells to the present peal.

Anglesea.—The new parish church of Llanrhyddlad, Anglesea, is now nearly completed, and will shortly be opened for divine service. The church was designed (in the First Pointed style) by Mr. H. Kennedy, of Bangor, architect. The old church was in a ruinous state. The new building is within the churchyard walls, but on a different site.

Chester.—During the last six months great alterations have been made in the Lady Chapel of Chester Cathedral, under the direction of Mr. William Haswell, stonemason. The ribs in the roof, which were decayed in many places, have been restored; the quaint bosses restored, and a new one discovered; two windows, of which the jambs existed, replaced by the insertion of mullions and arches, and a general renovation effected. The chapel is now under the care of Mr. Octavius Hudson, of London, to whom the artistic decorations have been entrusted.

Knutsford.—The new church of St. Cross, Knutsford, in Cheshire, erected at the sole expense of the late Mr. Peter Legh, of Norbury Boothshall, on land belonging to him, has been consecrated by the Bishop of Chester. A parsonage-house and garden were provided by Mr. Legh. Mr. John Pennington Legh, the nephew and heir-at-law, is about to further endow the church with 3,000*l.* The church contains sittings for 432 persons.

IS A PROPRIETOR LIABLE FOR A CONTRACTOR'S NEGLECT?

A CASE has been recently tried in the Court of Exchequer at Dublin, wherein the owner of a vessel wrecked against the piles used in the construction of the new pier at the port of Wicklow was the plaintiff, and the Harbour Commissioners, for whom the work was executed, the defendants. The Commissioners entered into an agreement with Mr. Rillen, a contractor, and he found it necessary to drive the piles in question, after which a storm arose, the vessel dashed against them, and her cargo was lost.

Baron Greene delivered his judgment, and said that, generally speaking, parties constituted such as the commissioners were, were not liable for the negligence of a contractor, and that it appeared to him, in this case also, the latter, not the former, was responsible for the damage done.

Baron Richards concurred. There was a marked distinction between master and servant, and contractor and employer, and therefore in the present case it was not the duty of the commissioners, but the contractor, who was on the spot from day to day, to put up lights, whereby the accident might have been avoided, and by his negligence in not doing so he incurred responsibility.

Baron Pennefather also concurred.

The Lord Chief Baron dissented, and stated that where a contractor exercised *independent* control

over a work, he was personally liable; but where employed to do a thing the consequence of which would be injurious, the employers were liable. If the contractor had the power to put up the lights, and had not done so, the commissioners would be protected; but here the contractor had *no* power to do so without the sanction of the commissioners, on whom the liability, for not *directing* that lights should be erected, should be cast. The position, the character, and the circumstances attendant upon the construction and erection of the light were all matters by direct provision of the statute for the consideration of the Ballast Board, and it would be most dangerous to give a contractor discretion in such an instance. It was gross neglect of the commissioners to permit the driving of the piles in a navigable river without enabling the contractor to prevent their becoming instruments of destruction. In his opinion no control was given to the contractor, and none could be exercised.

The majority of the Court ruled, and judgment was entered for the defendants.

ELECTION OF DISTRICT SURVEYOR FOR SOUTHERN DIVISION OF LAMBETH.

METROPOLITAN BOARD OF WORKS.

AT a meeting of the Board, held on the 19th instant, the Board proceeded to consider the applications of candidates for the office of district surveyor, under the Metropolitan Building Act, for the district of the southern division of Lambeth. A list of the candidates was then read as follows:—

M. D. Wyatt, R. Tress, G. Legg, W. R. Gritten, H. Laxton, Gore Ouseley Lane, J. W. Papworth, G. Aitchison, jun.; James Thomson, T. E. Benham, C. J. Badger, J. Johnson, J. B. Redman, J. Liddiard, H. Jarvis, W. Young, J. J. Cole, T. E. Knightley, J. G. Hilton, G. Morgan, J. Barnett, J. Tarring, J. F. Earle, H. Parsons, A. M. Hayes, and R. Syer Hoggar.

The names of the candidates were then severally put to the vote, for the purpose of reducing the number to six, who were found to be Messrs. H. Parsons, Barnett, Tress, Jarvis, Jas. Thomson, and J. Johnson.

Ultimately, Mr. H. Parsons was elected to fill the office.

THE ARCHITECTURAL MUSEUM PRIZES.

PRIZES are offered to art-workmen during the present year for the best specimens of metal-work, wood-carving, drawing from specimens in the Museum, and modelling from natural foliage, viz.:—The committee offer a prize of 10*l.* for the best specimen of hammered work in iron, secured by welding or riveting. Mr. Beresford Hope, M.P. offers through the committee, a prize of five guineas for the best specimen of wood-carving, forming the whole or a complete portion of any work, and consisting of groupings from natural or conventional foliage, with or without the introduction of animal life, and illustrative of some architectural composition of the thirteenth or fourteenth centuries. Mr. G. Godwin offers, through the committee, a prize of five guineas for the best series of not less than four full-sized studies, drawn and shaded either in pencil, chalk, or single colour, from specimens in the Architectural Museum. And a prize of two guineas is offered, through the committee, for the best specimen of modelling in plaster from natural foliage conventionally arranged as a boss, finial, or running ornament for hollow mouldings. The conditions may be obtained at the Museum, Brompton.

Miscellanea.

SUBSIDENCE OF SIX HOUSES AT LIVERPOOL.—Considerable alarm has been created by the ground rapidly subsiding under six houses in Mulberry-street. The railway tunnel from Edge-hill to the Lime-street station runs under the tenements, and a conclusion was at once come to that the roof of the tunnel had given way and was falling in. Mr. Rishton, the borough building surveyor, was sent for, and his knowledge of the locality convinced him that the fears as to the tunnel were groundless: he had a flagstone lifted, and it was discovered, according to the *Courier*, that a sunk cistern or tank had got so far off the level as to prevent the overflow from having access to the waste pipe. The waste water, it was also found, was running into the imperfectly consolidated mass with which the old quarry (upon which the houses were built) had been filled up, thus causing a rapid subsidence. The houses were considerably damaged, being twisted and cracked in an extraordinary manner.

CAST-STEEL SHIPS.—Messrs. Laird and Co. of Liverpool, says the *Mining Journal*, are now engaged in constructing a vessel of homogeneous metal, which is to be placed at the disposal of the great discoverer, Dr. Livingstone, for the purpose of exploring the vast rivers of the South African continent. By this means he will be enabled to traverse the streams and lakes of a tract hitherto unknown to civilized man. This homogeneous metal, it adds, contains all the properties of cast and wrought iron, without its defects: it is as free from oxidation as steel, at the same time not so brittle.

GAS.—The metropolitan vestry deputations and district boards have adopted a memorial to the Home Secretary (whoever that may be), setting forth the various causes which the gas consumers of the metropolis have for complaint against the gas companies, who had divided the capital into districts, with a view to monopolise the several portions, although they obtained their Acts on the express understanding that competition, and not monopoly, was their object. The memorial prays for a committee of the House of Commons to examine into the question.——The Doncaster Gas Company have agreed to reduce the rent of metres from 5*s.* to 4*s.* a year for three lights, and 2*s.* less for all large metres.——The Petworth Gas Company, who have been earning at times as much as nine per cent. dividend, are desirous, apparently, of diminishing their profits to a more moderate and average standard; for they have given notice of a rise in the price of their gas.——The Belfast Company have resolved to reduce the price of their gas from 4*s.* 7*d.* to 4*s.* 2*d.* and will doubtless thereby raise *their* dividends.——At Montrose, the consumers are grumbling at the inferior quality of their gas, and the virtual rise of price exacted in increased bills of charge for lighting. ——Gas-burners are now being manufactured from steatite or soapstone. Years since, burners made of lava were introduced into London by Mr. Trimbey, of Queen-street, Cheapside. It was said of the lava burners that, instead of becoming choked up with rust, &c. they seemed rather to improve with the heat, and always remained clear and clean. We doubt the durability of the steatite.

ARCHITECTURAL INSTITUTE OF SCOTLAND.—On Monday evening, the 15th, a meeting of the members of this Institute was held in George-street Hall, Mr. Murray, of Murray's Hall, in the chair. Mr. Alexander Thomson, of Banchory, read a paper on "The Water-works of the Romans—aqueducts, reservoirs, baths, and drains." He explained the system upon which the Romans constructed their works of this description, and their enormous extent, the nine aqueducts of Rome at one period being computed to extend 278 miles in length, of which 243 miles were under-ground work, culverts, and small tunnels, seven miles supported by plain walls and embankments, and twenty-eight miles supported by arches. The masonry of these was of great strength and solidity, although no cement was employed, and the accuracy of the stone-work was remarkable. One excellent feature in the Roman system of supplying the city with water was the principle of keeping the water in enclosed reservoirs, and conveying it under-ground into the city, so that the light was excluded from it.

THE METROPOLITAN OMNIBUS TRAMWAY BILL.—From a published document it appears that the Omnibus Company contemplate the appropriation to themselves alone of that portion of the public thoroughfare on which their proposed tramways are to be laid, or at least the acquisition of power to levy tolls from any carriages that may run upon it,—certainly a preposterous expectation, which the Legislature will take care is not realized. The idea of an omnibus tramway, as we have before said, is an excellent one which ought to be encouraged, special care being taken, in laying it down and keeping it in repair, that no harm to the general traffic should accrue; but to ask the Legislature for a right of private property in miles of the public thoroughfare, is rather cool. The late Chief Commissioner of Works naturally determined to oppose such a demand, *mordicus*, as the Scottish lawyers say. We hope the company will reconsider their Bill.

THE BEDFORDSHIRE ARCHÆOLOGICAL SOCIETY.—The monthly meeting of this society was held on February 16th, at the Society's-rooms, in Bedford. Some plans for excursions to be taken in the ensuing spring and summer were discussed; and various subjects connected with local antiquities came under the consideration of the meeting.

LECTURE ON ARCHITECTURE AT BIRMINGHAM.—Mr. E. M. Barry delivered a lecture on "Architecture," on the 15th inst. to a numerous audience, in the theatre of the Midland Institute, Paradise-street, Birmingham. Having premised that it was his intention only to refer to those styles of architecture which were best known and most practised in this country, the lecturer traced the rise and progress of these different styles, indicating their distinctive features, and showing how architecture had been modified by the influence of our national character, and by political events. After discussing various other points in the history of architecture, the lecturer in conclusion advocated the extension of a knowledge of art as conducive to men's happiness, and rendering them wiser and better.

THE MANCHESTER SCHOOL OF ART.—The annual meeting of this school was held at the Royal Manchester Institution on Thursday in last week, Mr. Edmund Potter, F.R.S. president, in the chair. The president expressed his regret at the small attendance. The school had been going on well, and doing good in a quiet and useful way. He wished that so useful an institution was founded upon larger support from his fellow-townsmen. The Art Treasures Exhibition, as expected, damaged their receipts materially, as it did every other institution for the time being. He was quite satisfied, however, that the injury done to that and similar institutions was only for a time. He regretted that the public did not adequately support such institutions by voluntary contributions, and in the absence of this means of support he was more willing than he was at one time to receive Government aid, rather than that they should languish. The report of the council recorded the fact of the satisfactory working of the school and its great utility. Though the subscriptions had somewhat decreased, the financial condition of the institution had improved from strict attention to economy, and it was hoped that the school would soon be placed out of debt. Mr. Hammersley reported that the school had been attended by 272 pupils in the first quarter, 107 in the second, 234 in the third, and 200 in the last. It would be impossible (he said) to go into any decorative works in Manchester without finding at the head of the department some of the pupils of this school, and there were always applications on their books for youths who showed taste for drawing, from calico printers, artists, silk manufacturers, decorators, and wood and stone carvers. The demand for art industry suggested an opening for worthy occupation for the females of this district. One per cent. of our population was now under the influence of art education. The receipts towards the support of the school from Government were stated to be 425*l.*; annual subscription, 273*l.*; students' fees to public classes, 206*l.*; Owen's College, 30*l.*; total 236*l.*: private classes, 104*l.*; public classes, 58*l.*; total received for fees, 348*l.*; balance 120*l.*; total 1,167*l.* The debt owing at the beginning of the year was 204*l.*; masters' salaries, 472*l.*; debt remaining, 120*l.* The report and accounts were adopted.

"CAVALRY BARRACKS."—On the 15th February, in the House of Commons, Viscount Ingestre asked the Under Secretary for War when it was the intention of Government to proceed with the designs for infantry and cavalry barracks selected by the official committee on barrack accommodation for the army in the years 1855 and 1856, according to the pledge given to the successful candidates. Sir J. Ramsden said that since the committee had sat on this question no new barracks had been commenced. When the army estimates came before the House he would have to ask for a sum of money for the erection of small cavalry barracks at Nottingham. If the House should grant that vote, it was the intention of the noble lord at the head of the War Department to offer the erection to the gentleman who had obtained the first prize for the design for cavalry barracks.—It is to be hoped, that the change of Government will not prevent this, which would be but an act of justice. We shall recur to the barracks question before long.

USEFUL EMPLOYMENT IN THE FRENCH AND AUSTRIAN ARMIES.—The French army in Algeria, as the country is now quiet, is not to be permitted to waste its time in ruinous idleness, but it will be employed in constructing railways. Orders have been given to send from France the necessary tools for the use of these military pioneers of civilization.——We learn from Vienna that 6,000 men, belonging to the Austrian army, are to be employed in taking down the ramparts of that city, as lately decided on. The work will be commenced in the spring.

PREVENTION OF DEATHS FROM AFTER-DAMP.—Mr. W. Howard, of Great Queen-street, Lincoln's-inn-fields, has just patented an invention for use in mines where explosions from fire-damp are probable. He proposes carrying a series of air-pipes from the surface through the various levels. To these pipes, at convenient distances, he attaches a short length of vulcanised india-rubber tubing, at the end of which is a small chamber, which fits over the mouth and nostrils of the person using it. By an arrangement of simple valves, the pure air can be inhaled from the fresh-air pipes, but is prevented from returning, whilst the vitiated air is exhaled through an orifice near the mouth-piece, protected by a valve, so that the air in the level cannot reach the lungs of the miner. The invention is applicable to every situation where foul air exists. It resembles a recent one for entering gasometers, &c.

The Play-ground Society.—Although we have already made incidental allusion to this new society, while speaking of their efforts in behalf of the preservation of the open space at Smithfield, we think it due to such a society to aid in bringing their formation and intentions prominently before the metropolitan public. Among the patrons of the society are the Earl of Shaftesbury, the Bishop of London, Lady Byron, the Marquis of Westminster, and other influential names; and on the committee are Lords Ebrington, Stanhope, and Durham, Mr. W. F. Cooper, M.P. and various other members of Parliament, Mrs. Howitt, Mrs De Morgan, and others equally well-known. Mr. Edward West, 17, Bull and Mouth-street, St. Martin's-le-Grand, is the secretary. We do not yet know much, personally, of the way in which the society is carrying out its objects, but these are decidedly good in themselves, comprising as they do the opening of play-grounds, however humble or restricted where more expansive or better ones cannot be had, and especially in the more crowded parts of the metropolis. The physical improvement of the children born in London is an object in view, and also the prevention to a certain extent of those habits which lead to a necessity for refuges and reformatories. Subscriptions and grants of ground are invited, and contributions can be restricted as to special objects in view.

The Motto System in Competitions.—The recent observations in our pages, on the inutility and oftentimes injuriousness of the motto system, have been largely quoted and commented on. The *Gateshead Observer*, after reprinting some of them, adds,—"It once happened to us to be on the show-ground of an agricultural society on the Borders, where a list of the entries was placed in our hands. 'How is this?' said we, 'you give, here, the names of all the competitors, and the judges have not made their awards!'—'We always do,' was the answer of the secretary; 'and so ought every society. The judges cannot avoid knowing the owners of many of the animals, and the better way is to let them know the whole, and throw them entirely on their honour." The *Sheffield Independent* somewhat inclines to the system, saying,—"When, however, professional men and an extensively circulated publication like the *Builder*, advocate its abandonment, we cannot but think that in its present mode of working, the motto system must frequently be a failure. Whether that failure arise from an inability to keep silence on the part of the judges, or from any intrinsic defect of the system itself, we leave to others to decide. Capability of abuse is no insuperable argument against anything, unless it can be shown that the abuse as a matter of fact preponderates so as to form the rule. The motto system has been adopted with reference to the new wing to our Dispensary; we hope the competitors will have no reason to adduce their own cases in confirmation of the *Builder's* objections."

Architecture at Sherborne.—On the 16th, a lecture on architecture, the last of the series in connection with the church schools, was delivered by Mr. Slater, architect, at Sherborne. Starting with the early type of the Christian church, the Basilica, and minutely pointing out its features, the lecturer noticed the round towers of Ireland—which were always built in churchyards, and probably answered the twofold purposes of belfries and keeps for the sacred utensils in time of danger—the Roman and Saxon ecclesiastical remains—and, arriving at the Norman period, referred to the works in this town, foremost amongst which stands the venerable abbey, which was originally built in 1080, and the chief Norman features of which are the arches of the tower, the internal masonry of the nave piers, and the south porch. He afterwards described the other styles.

Discoveries at Jerusalem.—A letter from Jerusalem of the 4th ult. says:—M. Ratisbonne, a convert to Roman Catholicism from the Jewish religion, has just succeeded in obtaining, by purchase, a portion of the palace of Pontius Pilate, with the intention of building on it a house for the order of the Daughter of Sion, of which he is one of the founders. The site purchased is covered with ruins of Arab buildings, but beneath them are others of constructions that existed in the time of Herod, and, what is most remarkable of all, part of what is known as "Pilate's Arch." The large blocks of stone of which it is formed, and the style of the architecture, permit no doubt of the fact to be entertained. The blocks are similar to those which are to be found in the buildings of the time of Herod now existing in Jerusalem; and the ornamentation, which is simple, is in the same style also. Several vaults and cisterns cut in the rock have also been discovered.

The Glass Trade at Stourbridge.—The glass trade in this neighbourhood has been rapidly getting worse during the last three or four weeks. At some of the principal manufactories as many as twelve or fourteen men have been discharged every week, and the work of those remaining reduced considerably.

Breaking up of "Big Ben."—The condemned bell at Westminster has been broken up by means of block and tackle suspending a piece of iron nearly two tons in weight. The bell was laid on its side, and the iron weight suddenly dropped upon it, after the manner of pile-driving in the river.

The Leeds Workhouse Competition.—The exhibition of the plans is already closed, having only been open till Friday in last week. The guardians also resolved to forward, on that evening, the first-premium plans to the Poor-law Board for their approval. Separate petitions are being prepared by the minority of the Board, and by the ratepayers of Leeds, for transmission to the Poor-law Board, when it is probable the guardians will be compelled to reconsider their award.

Memorial Window for Retford Parish Church.—It has been resolved, as a testimonial to the Rev. W. A. Plumptre, to fill the two-light window in the north side of the chancel of the parish church of Retford with stained glass. The subject selected is "The Manifestation of Christ to the Gentiles." The estimated cost is about 30*l.*

Lecture on the Brick Manufacture.—A lecture on this subject was delivered at the Bristol Mining School, last week, by Mr. G. C. Greenwell. Common bricks (he said) had been made in the earliest ages, and, geologically, it might be inferred that alluvial countries deficient in stone ordinarily adapted for building would be the first scenes of brick-making. They were not acquainted with the site of the Tower of Babel, but as bricks were used in its construction, they might with confidence conclude that it was a country where there was an alluvial soil; a conclusion they were justified in by the further record that in the building "slime" was used for mortar. The date of this, the first record of brick-making, was about 2247 B.C.; and the record, moreover, informed them that the bricks were burned "thoroughly." The next record of brick-making was contained in the early chapters of Exodus, or about 750 years later, when, notwithstanding the time which had elapsed, and during which they might have naturally supposed that improvements should have been made, he assumed that the art had retrograded, and that bricks were no longer burned, but simply baked in the sun, and their conscience aided by a mixture of straw with the clay of which they were composed. This was expressly affirmed by Philo (life of Moses), who was himself a native of Alexandria, in Egypt, and who says, in describing the oppression of the Israelites, that some were obliged to work in clay, and others to gather straw for the formation of bricks, "because straw is the binding of the brick." The lecturer afterwards described the art of brick-making, and recited the articles or conditions into which a contractor was generally expected to enter before receiving an order to any great extent. The quantity of bricks made in this kingdom, he stated, was about 1,800,000,000, Manchester alone making 130,000,000 per annum.

TENDERS.

For new schools, Huntley-street, Tottenham-court-road; Mr. Ragget, architect. Quantities supplied:—

Wood and Son	£2,433 0 0
Brass and Son	2,184 0 0
Dove, Brothers	2,025 0 0
Lucas, Brothers	1,995 0 0
Little and Son	1,933 0 0
Turner	1,874 0 0
Coleman	1,860 0 0
Laurence	1,850 0 0
Mansfield	1,830 0 0
Trollop and Son	1,795 0 0

For finishing ten houses, Elgin-crescent, Notting-hill; Mr. W. Sim, architect. Quantities not supplied:—

Dove, Brothers	£2,735 0 0
Cowland	2,443 0 0
Fish	2,422 0 0

For paving Gray's-inn-lane with new Aberdeen granite cubes, from Holborn to Verulam-street; Mr. Lewis H. Isaacs, Surveyor to the Board:—

Stiles	1,190 0 0
Beevers	1,188 0 0
Mowlem and Co.	1,180 0 0
Pratt and Sewell (accepted)	£1,168 0 0

For a pair of houses at Putney; Mr. S. Wood, architect. Quantities supplied:—

Avies	£515 19 0
Harrison	456 12 9
Aviss and Sons	448 17 3
Adamson and Sons	435 5 3

To the Vestry of Camberwell, for the inclosing of Camberwell-green with an iron fence and ornamental gates; Mr. Berriman, architect:—

Marriot	£2,312 0 0
Cannon Company	1,683 0 0
Grissell and Co.	1,642 0 0
Jukes, Coulston, and Co.	1,581 0 0
W. Partridge	1,535 0 0
Cottam and Hallen	1,520 0 0
F. Ford and Son	1,484 0 0
Thompson	1,444 0 0
Keast and Moon	1,389 0 0
Hill and Smith	1,375 0 0
J. A. Thornhill	1,335 0 0
W. J. Jarvis	1,300 0 0
J. Walker	1,217 0 0
G. W. Geerish	1,193 0 0
Wm. Smith	1,190 0 0
Eli Richards	1,184 5 4

To the Council of Weymouth for constructing the pier:—

Tredwell and Co. Gloucester	£13,858 0 0
Moxon, Dover	11,700 0 0
Pritchard and Roberts, Bristol	12,500 0 0
Gibbons and Gardener, Chippingham	6,100 0 0

[Our informant suggests that Messrs. Gibbons and Co. may have omitted to include both sides of pier. The estimated cost was 12,000*l.*]

For the Trustees of Lady Holle's School, for alterations, &c. Spital-square and Hart-street; Mr. E. Woodthorpe, architect:—

Turner and Sons	£1,559 0 0
Gammon	1,491 0 0
Brown and Robison	1,475 0 0
Pritchard	1,398 0 0
Brass and Sons	1,382 0 0
Larke and Son	1,296 0 0

For alterations, and rebuilding No. 2, Mason's-alley, Basinghall-street; Mr. Woodthorpe, architect:—

Larke and Son	£1,353 0 0
Axford and Hall	1,172 0 0
Brass and Son	1,148 0 0
Pritchard and Sons	1,082 0 0
Brown and Robison	1,055 0 0
Turner and Sons	1,022 0 0

For new schools at Walsall-wood, near Walsall; Mr. Cranston, architect, Birmingham:—

Hardwick and Son, Birmingham	£1,184 0 0
Joherus and Arrowsmith, Walsall	1,084 0 0
Highway, Walsall	1,065 0 0

For Mutual Life Assurance Offices, King-street, Cheapside:—

	Portland Stone.	Bath Stone.
G. C. Grissell	£8,787	£8,009
Cubitt	6,935	6,435
Bird	6,770	6,270
Jay	6,722	6,442
Holland	6,468	6,106
Mansfield	6,350	5,850
Lucas	6,277	5,910
Piper and Son	6,091	5,600
Brown and Robison	6,090	5,640
Myers	5,979	5,562

For building five almshouses in London-fields, Hackney, and fence, walling, and iron railing; Mr. Geo. Low, architect. Quantities not supplied:—

	Almshouses.	Fence, Walls, and Railing.	Total.
Axford and Co.	£2,015	£273	£2,288
Elston	1,932	275	2,207
King	1,877	326	2,203
Sadler	1,900	294	2,194
Dove, Brothers	1,820	245	2,065
Butters	1,647	225	1,872

For a new church at Putney; Mr. Lee, Architect. Quantities supplied:—

	Carcase.	Finishing.	Tower.	Organ-room.	Total.
	£.	£.	£.	£.	£.
Higgs	2,966	910	1,020	120	5,019
Nicholson and Son	2,860	910	1,030	130	4,970
Evans, Brothers	2,902	1,067	800	130	4,904
Patrick and Son	2,814	918	973	164	4,869
J. and C. Bird	2,725	968	936	120	4,749
Myers	2,866	828	912	108	4,724
McLennan and Bird	2,667	887	999	130	4,674
Colls and Co.	2,677	786	1,019	116	4,598
Adamson and Son	2,664	808	1,013	84	4,569
Dove, Brothers	2,345	970	940	100	4,555
Aviss and Son	2,600	840	946	142	4,529
Trollope and Son	2,575	880	830	110	4,395

"*Extension of Sewers at Cheltenham.*"—We are asked to say that Mr. Riggott's tender should not have been 26,500*l.* but 15,500*l.* Why the former amount was returned we are not informed.

Middle Level Drainage."—Mr. Sissons states that his tender was not 14,500*l* but 15,975*l.* The statement came to us with authority we have no right to doubt.

St. Matthew's, Bayswater.—The accepted tender was from Messrs. Keyes and Head.

TO CORRESPONDENTS.

The Letters of a Weathercock.—A question has arisen with me as to whether the index-letters of a weathercock should be fixed pointing to the four quarters shown by the compass, or whether allowance should be made in fixing for the known variation of the compass, and the letters placed absolutely true to their several bearings? Can any of your readers inform me of the customary arrangement? In parts of the world where the variation of the compass is as much as six points, the method of fixing the indices of a vane becomes of consequence. When we hear of a north wind, do we understand the wind to be compass-north, or absolutely north?—A Learner.

*** The letters should be placed true to their several bearings.